

# THE IMPORTANCE OF PERCEIVED UTILITY OF EMOTION

BY

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DISSERTATION

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## ABSTRACT

To date, the vast majority of emotion research has been devoted to the role of felt affect. In contrast, relatively little is known regarding the role of other, potentially important emotion constructs (commonly referred to as “meta-emotion”). The present research examined the perceived utility of emotion, or the degree to which emotions are perceived to be useful in goal attainment. Due to the novelty of this construct, in four separate projects I examine: (a) the measurement of perceived utility of emotion and the stability of this construct across time and contexts (Projects 1-2); (b) the relation between perceived utility of emotion in attributions and behavioral intentions (Project 3); and (c) the potential importance of perceived utility of emotion in interpersonal sensitivity and depression (Project 4). Findings from the present research suggest that perceived utility of emotion plays a role in individual differences, including depression, even after taking into account felt affect.

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## CHAPTER 1: GENERAL INTRODUCTION OF PERCEIVED UTILITY OF EMOTION

Historically, emotion researchers have paid much attention to felt affect and the actual experience of emotion. For example, Wilhelm Wundt, widely regarded as the “father” of experimental psychology, devoted much effort towards examining feelings and immediate experiences of emotion. To date, we know relatively little regarding other, potentially important, emotion-related constructs (commonly referred to as “meta-emotion”). The current research examines the perceived utility of emotion, defined as the degree to which emotions are perceived to be useful in goal attainment (Chow & Berenbaum, 2012). I will first introduce this construct, trace its origins, and discuss its potential importance in understanding psychopathology. I will then discuss limitations of existing research while introducing five separate, yet related, projects in which I examine: (a) how perceived utility of emotion may be measured; (b) what types of emotions may be applied towards a better understanding of the link between perceived utility of emotion and interpersonal factors; (c) the stability of perceived utility of emotion over time and across contexts; (d) the role of perceived utility of emotion in interpersonal processes and behaviors; and (e) how perceived utility of emotion may influence depression through interpersonal sensitivity.

### *Perceived Utility of Emotion*

Perceived utility of emotion pertains to the perceived usefulness of emotion in facilitating goals (Chow & Berenbaum, 2012). As will be discussed further below, a wealth of research demonstrates the power of emotion perceptions/beliefs in shaping experiences and behavior. A cognitive-affective construct, perceived utility of emotion is theorized to influence emotional experience (e.g., frequency, intensity) and emotion-related behaviors (e.g., emotion regulation). Indeed, existing research has shown that attitudes towards emotions, or the degree to which

emotions are liked versus disliked, predict emotional experience and behavioral reactions (e.g., Harmon-Jones, Harmon-Jones, Amodio, & Gable, 2011; Tamir, Chiu, & Gross, 2007).

Similarly, the degree to which one perceives an emotion as useful is likely to dictate the degree to which that emotion is experienced, as well as behaviors associated with the experience of that particular emotion. For example, an individual who perceives appreciation as particularly useful is likely to: (a) experience appreciation frequently and intensely; and (b) engage in a variety of prosocial behaviors and actions.

Perceptions of emotional utility are theorized to arise primarily in relation to one's goals/strivings (defined as the goals one typically tries to achieve in their everyday lives; Emmons, 1986). For example, because pride is conceptualized as an emotion linked to appraisals of self-worth and is theorized to influence anticipated and actual behavior (e.g., Mascolo & Fischer, 1995; Tangney, Stuewig, & Mashek, 2007), from a functional perspective, perceiving pride as useful is likely to facilitate the attainment of independent and self-promoting goals through the experience of pride and related behaviors (e.g., taking personal credit for success, blaming others for failure). Thus, I theorize that individuals with independent goals (e.g., "looking out for my own interests") are likely to perceive emotions such as pride as being particularly useful.

#### *The Origins of Perceived Utility of Emotion*

The relationship between beliefs/perceptions and emotion has been widely studied. Cognitive theories in emotion (e.g., Lazarus, 1991; Ortony, Clore, & Collins, 1988) focus on the prominent role of cognition in influencing emotional experience. Under this domain of research, beliefs and perceptions are generally viewed as antecedents of emotional experience and emotion-related behaviors (though some research has examined emotions as causal factors in

shaping beliefs). For example, according to “appraisal theory”, one’s appraisals of the world, as well as one’s perceptions of the causes and consequences of events, influence emotional experience (e.g., Scherer, 1999). More recent research has found that attitudes towards emotions (conceptualized as the subjective liking versus disliking of discrete emotions) influence a range of emotion-related phenomena, such as felt affect, emotion regulation, and situation selection (Harmon-Jones et al., 2011).

There are several reasons why an individual might possess strongly held beliefs and perceptions regarding emotion. Historically, it was widely assumed that individuals were motivated to seek pleasure and avoid pain (Larsen, 2000; Vastfjall, Garling, & Kleiner, 2001). Under this assumption, beliefs and attitudes towards emotions were largely shaped by the subjective pleasure one received from experiencing those emotions. Increasingly, researchers have been examining utilitarian/functional accounts in emotion. Research in this domain, such as the feelings-as-information theory in emotion (i.e., the degree to which felt affect conveys information to an individual; Clore & Huntsinger, 2007; Schwarz & Clore, 1996, 2007), highlight the notion that emotions are complex processes that engage us in problem solving and that provide us with benefits beyond hedonic considerations (e.g., Frijda, 1986; Keltner & Gross, 1999). Further, research by Tamir and colleagues has found that emotions can be valued for their usefulness in accomplishing goals. For example, they have found that individuals will choose to increase their experience of negative emotions (e.g., fear, anger) if they believe those emotions to be useful in certain contexts (e.g., avoiding threat, confronting others; Tamir et al., 2007; Tamir & Ford, 2012). Although this growing body of research regarding utilitarian/functional considerations in emotion is making major contributions to our

understanding of human behavior, we know relatively little regarding its potential importance in psychopathology.

### *The Role of Perceived Utility of Emotion in Psychopathology*

To date, the majority of research examining the role of emotion beliefs in psychopathology has been devoted to negative emotions. For example, much work has examined the role of worry beliefs in pathological worry and Generalized Anxiety Disorder (e.g., Berenbaum, 2010; Borkovec, 1994). Indeed, the experience of worry may in part be influenced by the perceived usefulness of worry in accomplishing goals (e.g., avoiding threat, anticipating outcomes). In the current research, I examine the potential role of perceived utility of appreciation in depression. Similar to other constructs commonly studied in relation to psychopathology (e.g., personality traits), the theorized link between perceived utility of emotion and psychopathology is likely accounted for by mediating factors. One potential source of mediating factors is interpersonal functioning. A vast body of research has found that variables such as interpersonal sensitivity, interpersonal conflict, social support, and interpersonal skills play a pivotal role in depression (e.g., Boyce & Mason, 1996; Coyne, 1976; Downey & Feldman, 1996; Hammen, 1991; Joiner, 2002; Shih, Eberhart, Hammen, & Brennan, 2006).

Importantly, the degree to which perceived utility of emotion plays a role in depression through interpersonal factors is likely to depend on the emotion in question. A growing area of research is examining the potential importance of gratitude (which is conceptually similar to appreciation; Wood, Maltby, Stewart, & Joseph, 2008) in well-being and depression (for a review, see Wood, Froh, & Geraghty, 2010). I theorize that perceiving appreciation/gratitude as useful may influence depression through interpersonal factors such as interpersonal sensitivity and interpersonal conflict. For example, individuals high in perceived utility of

appreciation/gratitude are likely to: (a) experience appreciation/gratitude frequently; and (b) experience less negative affect in response to critical feedback, thereby leading to lower levels of depression.

### *The Current Research*

The current research is composed of four interrelated projects (discussed below) broadly aimed at: (a) validating the construct of perceived utility of emotion; and (b) examining the potential importance of perceived utility of emotion in depression. Some projects are composed of multiple studies. Specifically, Projects 1 and 2 examine the construct of perceived utility of emotion, including its measurement, and its stability over time and across contexts. Project 3 examines the potential impact of perceived utility of emotion in influencing attributions and behavior, whereas Project 4 examines the potential importance of perceived utility of emotion in depression.

Because existing research in utilitarian considerations in emotion have largely employed the use of experimental paradigms, there previously were no measures devoted to assessing individual differences in perceptions of emotional utility. In Project 1, I introduce and examine the validity and reliability of an abridged version of the Perceived Affect Utility Scale (PAUSE; Chow & Berenbaum, 2012), a self-report measure devoted to measuring perceptions of emotional utility. In Project 2, I examine various properties of perceived utility of emotion, most notably its temporal stability and its stability across different contexts. Having explored the measurement and properties of perceived utility of emotion, in Project 3, I examine the role of perceived utility of emotion in influencing cognition and behavior in an interpersonal context. Project 4 is a culmination of Projects 1-3, in which I seek to apply perceived utility of emotion in understanding depression.



## CHAPTER 2: PROJECT 1 AND DEVELOPMENT OF A NEW MEASURE OF PERCEIVED UTILITY OF EMOTION (PAUSE-R)<sup>1</sup>

The importance of studying individual differences in emotion and emotion-related variables has long been widely recognized. Indeed, the need to study individual differences in emotion has led to the development of numerous self-report instruments aimed at assessing the frequency and types of emotions individuals report experiencing (e.g., Positive and Negative Affective Schedule-- PANAS; Watson, Clark, & Tellegen, 1988), the degree of intensity with which emotions are experienced (e.g., Affect Intensity Measure-- AIM; Larsen, Diener, & Emmons, 1986), as well as the degree to which individuals regulate their emotions (e.g., Emotion Regulation Questionnaire-- ERQ; Gross & John, 2003). However, whereas the majority of emotion-based measures assess some aspect of the actual experience of emotion, a growing body of literature demonstrates the importance of aspects of emotion outside of actual affect, such as ideal affect (Tsai, 2007; Tsai, Knutson, & Fung, 2006) and utilitarian considerations in emotion (e.g., Tamir, Chiu, & Gross, 2007; Tamir, Mitchell, & Gross, 2008). For example, research has found that individuals will choose to increase their experience of even negative emotions (e.g., fear, anger) if they believe those emotions are useful to them, which in turn facilitates performance (e.g., Tamir & Ford, 2012; Tamir et al., 2008). Recent research examining the role of perceived utility of emotion (using the Perceived Affect Utility Scale-- PAUSE; Chow & Berenbaum, 2012) has found that perceptions of the usefulness of different types of emotions are associated with a range of individual difference variables, including

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<sup>1</sup> This research was completed with the assistance of Howard Berenbaum and Chun Wang, both of whom are listed as co-authors in the original manuscript.

depression (Chow, Berenbaum, & Flores, 2013a). The aim of the current research was to provide evidence of the validity and reliability of an abbreviated version of the PAUSE.

### *Perceived Utility of Emotion*

Perceived utility of emotion is defined as the degree to which emotions are perceived to be useful in goal attainment (Chow & Berenbaum, 2012). Importantly, perceptions of emotional utility may be seen as an individual difference variable that is related to trait affect, such that individuals often experience those emotions they believe to be most useful to them. Perceived utility of emotion has been found to be associated with attributions, behavior, cultural group, individual difference variables (e.g., independence, interdependence), and depression, even after taking into account the actual experience of emotion (Chow & Berenbaum, 2012; Chow et al., 2013a). Due to the potential importance of perceived utility of emotion, accurate and succinct measurement of this construct has the potential to make a meaningful contribution to (a) our understanding of human functioning; and (b) clinical work and practice.

To our knowledge, the PAUSE (Chow & Berenbaum, 2012) is the only existing instrument devoted to examining individual differences in perceptions of emotional utility.<sup>2</sup> It is a flexible, theoretically driven instrument that assesses three facets of emotional utility, which are the degree to which emotions are useful in (a) providing information to the respondent; (b) motivating the respondent; and (c) facilitating goal-directed behaviors in the respondent. The PAUSE may be used to measure the perceived utility of whichever emotions are of interest. To date, the PAUSE has mainly been used to measure the perceived utility of self-serving and other-

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<sup>2</sup> Jeanne Tsai has developed a measure assessing ideal affect (Affect Valuation Index; Tsai, Knutson, & Fung, 2006), or the emotions people ideally want to experience, which is a separate and distinguishable construct from perceived utility of emotion. We examine the relation between our measure and the AVI in the current research.

serving emotions (which we will refer to as self/other parsed emotions; Chow & Berenbaum, 2012; Chow et al., 2013a). Whereas self-serving emotions function to serve the needs of the individual experiencing the emotion (e.g., pride in self, jealousy), other-serving emotions function to serve the needs of others ahead of the needs of oneself (e.g., appreciation, guilt). Existing research using the PAUSE has found that it has good psychometric properties and is associated with a variety of individual differences variables (Chow & Berenbaum, 2012).

### *The Current Research*

Due to the relative length of the PAUSE (to date, the PAUSE has consisted of between 54 to 72 items), we sought to develop a shortened, more streamlined version of this instrument. In Study 1, using item response theory, we examined the psychometric properties of the PAUSE in order to determine whether any items or facets could potentially be deleted. We also examined the structure and construct validity of the abbreviated version of the PAUSE (which we will refer to as the PAUSE-revised, or PAUSE-r) using confirmatory factor analysis. Further, we explored the convergent validity of the PAUSE-r in relation to the original PAUSE, as well as the discriminant validity of the PAUSE-r by examining its association with measures of two related constructs: (a) actual affect; and (b) ideal affect (Tsai, 2007). Finally, we examined the associations between the PAUSE-r and a range of individual difference variables (e.g., personality traits, depression), as well as the incremental validity of the PAUSE-r in predicting those variables. In Study 2, we examined the two-week test-retest reliability of the PAUSE-r. Because we theorize that perceived utility of emotion is a relatively stable construct that is also influenced by state affect, we expected the temporal stability to be moderate to large (i.e., 0.5 - 0.7). In Study 3, in a large, non-student sample, we sought to replicate the findings of the

structure and construct validity of the PAUSE-r, in addition to the patterns of associations between the PAUSE-r and individual difference variables that were found in Study 1.

## Study 1

### Method

#### Participants

Participants were 357 undergraduate students (61% female; 246 European-American, 59 Asian-American, 26 African-American, 10 Latino-American, and 16 multiracial) between the ages of 18 and 22 ( $M = 19.0$ ;  $SD = 1.3$ ) at a large, Midwestern university. Participants were awarded class credit for participating. All participants provided informed consent and were fully debriefed after completing the study.

#### Instruments

*Perceived Utility of Emotion.* The PAUSE is based on the theory that for an emotion to be considered useful it should facilitate the attainment of goals that are relevant to the individual. We theorized that the perceived utility of an emotion should be associated with serving broad functions of utility. For example, an emotion that is perceived to be useful will serve to inform, motivate, and influence behavior, and the aggregate mean across these domains may be seen as a reflection of an emotion's overall perceived utility. Importantly, the inclusion of each of those domains was based on a wealth of existing research (e.g., Carver, 2001; Frijda, 1988, 1994; Keltner & Gross, 1999; Schwarz & Clore, 2003). The original version of the PAUSE asked participants to list their personal goals without further clarification. Consequently, there was considerable between-subject variation in the types of goals that were generated, ranging from goals that were transient and/or overly specific (e.g., get an A on my psychology exam tomorrow) to goals that were overly broad/vague (e.g., do well). In the current version

participants were simply asked to think of their goals and were provided with greater clarity of the term “goals.” Specifically, participants were instructed to think about the “things [they] generally seek to accomplish in everyday life, or the things [they] typically try to do. Some examples of goals are ‘getting along with others’, ‘trying to be the center of attention’, ‘trying to help others’, and ‘trying to do what is best for myself.’” The conceptualization of goals was influenced by existing literature on daily strivings, which has been found to be relatively stable and enduring (e.g., Emmons, 1991).

Similar to the PANAS (Watson et al., 1988), a popular measure of the actual experience of emotion, the PAUSE allows for the examination of specific types of emotions (e.g., afraid, sad). The scored portion of the measure consisted of three stems, with each stem followed by a list of words that describe specific emotions (e.g., ashamed, appreciative).<sup>3</sup> Among the three stems, one focused on the informational utility of emotions (*Feeling [discrete emotion] lets me know how well or poorly I’m doing in achieving my goals*), one focused on the motivational utility of emotions (*Feeling [discrete emotion] motivates me to achieve my goals*), and one focused on an emotion's ability to influence behavior (*Feeling [discrete emotion] makes it easier for me to do things that will help me to achieve my goals*). Participants were instructed to respond as they generally are and not as they wished to be. Participants rated the extent to which they agreed with each statement on a 1 (strongly disagree) to 5 (strongly agree) scale.

We used the PAUSE to measure perceived utility of self/other parsed and generic positive

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<sup>3</sup> In the original version, the scored portion of the measure consisted of six stems (three used for positive emotions and three used for negative emotions), with each stem followed by a list of words that describe specific emotions (e.g., ashamed, appreciative). In the current research we used a measure containing a total of three stems that could easily be used to assess both positive and negative emotions.

and negative emotions. Specifically, the PAUSE contained three positive self-serving emotions (happy for self, proud, deserving), three negative self-serving emotions (angry at others, disgusted with others, jealous), three positive other-serving emotions (appreciative, humble, respectful), three negative other-serving emotions (ashamed of myself, guilty, embarrassed of myself), three generic positive emotions (glad, pleased, cheerful), and three generic negative emotions (afraid, sad, miserable).

The scores for the three emotions representing each emotion grouping (e.g., self-serving positive: pride, happy for self, and deserving) were averaged to provide an overall score of perceived utility of that particular emotion grouping. Internal consistencies (Cronbach's Alpha) of the emotion grouping subscales were good, ranging from .81 to .86 (mean  $\alpha = .84$ ).

*Actual Experience of Emotion.* We developed a measure (based on the design of the PANAS; Watson et al., 1988) that assessed the actual experience of the same emotions that were assessed in the PAUSE. Participants were asked to rate (1 = very slightly or not at all; 5 = extremely) the degree to which they typically experienced, on the average, each emotion state (e.g., jealous, sad). Similar to the PAUSE, we computed a score for each emotion grouping (i.e., self-serving positive, self-serving negative, other-serving positive, other-serving negative) by averaging across their associated emotion items. Internal consistency of emotion groupings ranged from .71 to .83 (mean  $\alpha = .74$ ).

*Ideal Affect.* The Affect Valuation Index (AVI; Tsai et al., 2006) was used to measure ideal affect. The AVI asks participants to report the degree to which they would ideally like to feel different types of emotions over the course of a typical week. Participants rated each item on a 1 (never) to 5 (all the time) scale. We used the AVI to measure ideal affect of the same

self/other parsed and generic positive and negative emotions as the PAUSE. Internal consistency of emotion groupings ranged from  $\alpha = .65$  to  $.84$  (mean  $\alpha = .75$ ).

*Depression.* The 22-item Anhedonic Depression scale of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991) was used to obtain an index of depressive symptoms. The depression subscale of the MASQ has been shown to have good clinical utility and is predictive of concurrent depression (Bredemeier et al., 2010). Example items include, “felt like nothing was very enjoyable,” and “thought about death or suicide.” Participants rated items on a 1 (not at all) to 5 (extremely) scale. Internal consistency of the MASQ Anhedonic Depression scale was good ( $\alpha = .92$ ).

*Independence and Interdependence.* We administered the 30-item Self-Construal Scale (SCS; Singelis, 1994) to assess individual differences in independence and interdependence. Participants rated items on a scale from 1 (strongly disagree) to 7 (strongly agree). Internal consistency of the independence ( $\alpha = .73$ ) and interdependence ( $\alpha = .70$ ) scales were adequate.

*Big Five Personality Domains.* We administered the 50-item version of the NEO PI-R (Costa & McCrae, 1992) taken from the International Personality Item Pool (Goldberg et al., 2006). The short and long versions of the IPIP-NEO have been found to be highly correlated with the proprietary version (Goldberg, 2001). All items were randomized and participants rated each item on a scale from 1 (very uncharacteristic of me) to 5 (very characteristic of me). Internal consistency of the Big Five personality domains (i.e., openness, conscientiousness, neuroticism, agreeableness, extraversion) ranged from  $.78$  to  $.89$  (mean  $\alpha = .83$ ).

## **Results and Discussion**

### *Evaluating the items of the PAUSE*

Item Response Theory (IRT) was used to determine whether any of the existing items/facets of the PAUSE could be deleted. IRT is a statistical theory composed of probabilistic models that express the probability of a particular response to an item as a function of: (a) a latent trait; and (b) item parameters (Lord, 1980; Lord, Novick, & Birnbaum, 1968). IRT is concerned with how a set of observed manifestations of a latent variable (i.e., responses to the items) can be quantified to infer varying amounts of the underlying construct, along with the relative position of individuals along the implied continuum (de Ayala, 2009, p.2). Different from classical test theory, which focuses more on properties of an entire scale, IRT focuses on the performance of *individual* items as they contribute to overall scale performance. For categorical outcome variables with more than two categories, a number of polytomous models have been proposed, among which the partial credit model (PCM; Masters, 1982) is suitable for analyzing attitude or personality scale responses where subjects respond to statements on a multipoint scale. Muraki (1992) further generalized PCM by allowing the discrimination parameters to vary across items, and this generalization leads to the generalized partial credit model (GPCM).

A key assumption of the unidimensional IRT model is that items serve as observed indicators of a single underlying construct (Bond & Fox, 2007). When this assumption is violated, as in our analysis where the PAUSE measured six interrelated factors (i.e., six emotion groupings), a multidimensional IRT (MIRT) model needs to be considered instead. Due to the characteristics of the questionnaire and of the individual items, we fit the data with a confirmatory<sup>4</sup> multidimensional generalized partial credit model (MGPCM, Yao & Schwarz,

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<sup>4</sup> The loading structure of items on six factors is specified a priori in BMIRT. The BMIRT code is available from the authors upon request.



2006) using a BMIRT software program (Bayesian Multidimensional IRT; Yao, 2003), which allowed us to obtain parameters for each item. MGPCM is a multidimensional generalization of the GPCM model that allows the entire scale to measure multiple, correlated latent constructs. We based our model on a six-factor latent trait model, corresponding to the six emotion groupings we examined in the PAUSE (i.e., self-serving positive, self-serving negative, other-serving positive, other-serving negative, generic positive, generic negative). To eliminate less informative items, we were interested in examining the  $a$  parameter for each item, which indicates that particular item's amount of information and discrimination power, marked by the slope of the item response curve. Items with low  $a$  values are poor at discerning between individuals of different latent abilities, or in this case individuals with varying levels of perceived utility of each emotion grouping, and contribute little to the measure as a whole.

Figure 1 illustrates the item characteristic curves (ICC) for two different emotions (happiness, anger). The x-axis denotes the continuum of the underlying latent trait an item measures. Each curve represents the probability of endorsing that category for the item. As we move along the continuum of a latent trait, persons of increasing "trait" have increasing likelihood of strongly endorsing more "difficult" items (i.e., the items that express the trait in stronger or more extreme terms). Moreover, items with higher discrimination parameters (i.e., high loadings on the factor) have curves with steeper slopes. As seen in Figure 1, for both emotions, the left panel (representing the informational utility of emotion) exhibits less discrimination than either the center or right panels (representing the motivational and behavioral utility of emotion, respectively). Across all emotion items, the domains of motivational utility and behavioral utility had, on the whole, much higher  $a$  values than those of the informational utility domain (for the informational utility domain,  $a$  ranged from .32 to 1.05,  $M = .60$ ; for the

motivational utility domain,  $\alpha$  ranged from .73 to 1.43,  $M = 1.01$ ; for the behavioral utility domain,  $\alpha$  ranged from .61 to 1.63,  $M = .96$ ). Based on these findings, we decided to eliminate the informational utility domain of the PAUSE. Our decision to eliminate an entire domain /facet of the PAUSE, in contrast to individual emotion items, was based on our goal of making the PAUSE-r a flexible instrument capable of assessing any number of discrete emotions (and not just limited to those in the current research). Thus, based in part on the results of the IRT analyses, one-third of the total number of items in the PAUSE were eliminated. The PAUSE-r may be seen in the appendix. Across all emotion groupings, internal consistency (Cronbach's alpha) of the PAUSE-r was good and comparable to that of the original PAUSE, ranging from .81 to .85 (mean  $\alpha = .83$ ).

#### *Examining the Structure of the PAUSE-r*

We then proceeded to examine, using confirmatory factor analysis (CFA), the structure and construct validity of the PAUSE-r by comparing it with the original PAUSE. For each individual emotion grouping (e.g., self-serving positive), we imposed two a priori models onto the data and examined their relative fits. The two alternative models are illustrated in Figure 2. In one model (representing the PAUSE-r, right side), two latent facets (i.e., motivational utility of emotion, behavioral utility of emotion) were measured by the emotion items assessing those facets (e.g., motivational utility of pride, behavioral utility of pride). The fit of this model was then compared against a model (left side) containing three latent facets (i.e., informational utility, motivational, behavioral utility), each of which was measured by the emotion items assessing those facets. As seen in Table 1 (top), across all emotion groupings, both the two-facet model (representing the PAUSE-r) and the three-facet model (representing the original PAUSE) provided a good fit to the data. These findings suggest that the structures of both the PAUSE and

the PAUSE-r are valid and comparable in terms of fit. In general, across all emotion parsings, the two-facet model fit the data at least as well as the three-facet model.

#### *Convergent Validity between the PAUSE-r and the PAUSE*

Having found that the two-facet PAUSE-r provided a good fit to the data, we then proceeded to examine the association between the PAUSE-r and the PAUSE. We expected that if both of these measures were indeed measuring the same construct, the zero-order correlations between them would be extremely high. Similar to the confirmatory factor analyses, we obtained zero-order correlations between the PAUSE-r and the PAUSE for all emotion groupings (e.g., self-serving positive). As expected, across all emotion groupings, associations between the PAUSE-r and the PAUSE were extremely high, ranging from  $r = .94$  to  $r = .96$ .

#### *Discriminant Validity of the PAUSE-r*

To examine the discriminant validity of the PAUSE-r we examined the associations between the PAUSE-r and measures of (a) emotional experience; and (b) ideal affect. Existing research indicates that attitudes and beliefs regarding emotion are strongly associated with the emotions people actually experience (e.g., Harmon-Jones, Harmon-Jones, Amodio, & Gable, 2011; Tamir et al., 2007; Tamir & Ford, 2012). Put differently, individuals tend to experience those emotions they have positive beliefs about and perceive to be useful. Further, perceptions of emotional utility may be related to the emotions people ideally want to experience. Thus, although we expected a strong association between the PAUSE-r and measures of emotional experience and ideal affect, we also expected that the amount of variance ( $r^2$ ) accounted for by those associations would be modest.

As expected, across all emotion groupings, zero-order correlations between the PAUSE-r and emotional experience ranged from  $r = .27$  to  $.40$  (correlations between emotion groupings in

the PAUSE-r and the measure of emotional experience were as follows: self-serving positive = .40, self-serving negative = .33, other-serving positive = .29, other-serving negative = .29, generic negative = .27, generic positive = .31). Importantly, despite the significant associations between these two measures, the magnitude of the effect sizes indicated that these instruments are overlapping yet distinguishable.<sup>5</sup> Across all emotion groupings, zero-order correlations between the PAUSE-r and the measure of ideal affect were generally weaker, ranging from  $r = .09$  to  $.34$  (correlations between emotion groupings in the PAUSE-r and the measure of ideal affect were as follows: self-serving positive = .34, self-serving negative = .13, other-serving positive = .29, other-serving negative = .09, generic negative = .15, generic positive = .18).

Having demonstrated the discriminant validity between the PAUSE-r and actual experience of emotion as well as ideal affect, we next examined the associations between the PAUSE-r and individual difference measures. Further below, we examined the incremental validity of the PAUSE-r (after taking into account emotional experience and ideal affect) in predicting individual difference variables.

#### *Associations between the PAUSE-r and Individual Difference Variables*

The zero-order correlations between the PAUSE-r and individual difference measures can be seen in Table 2. As expected, perceived utility of self-serving positive emotions were significantly negatively associated with depression and neuroticism, and significantly positively associated with independence and the remaining domains of the Big Five (extraversion, conscientiousness, openness, and agreeableness). Perceived utility of other-serving positive and generic positive emotions evidenced a similar pattern of associations with individual difference variables, and, as predicted, perceived utility of other-serving positive emotions was significantly

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<sup>5</sup> Even when correcting for unreliability, the results were remarkably similar.

positively associated with interdependence. Overall, perceived utility of self-serving negative, other-serving negative, and generic negative emotions evidenced similar patterns of associations with individual difference variables. As expected, there was a trend for all three emotion groupings to be significantly negatively associated with conscientiousness, extraversion, and agreeableness, and significantly positively associated with depression and neuroticism. Next, we examined the incremental validity of the PAUSE-r in predicting individual difference variables.

#### *Incremental Validity of the PAUSE-r*

To examine the incremental validity of the PAUSE-r, we computed partial correlations to determine whether the associations between the PAUSE-r and individual difference measures would remain significant even after taking into account (a) the actual experience of emotion; and (b) ideal affect. Bolded cells in Table 2 indicate a significant association between an emotion grouping from the PAUSE-r and an individual difference variable after taking into account the actual experience of emotion. Italicized cells in Table 2 indicate a significant association between an emotion grouping from the PAUSE-r and an individual difference variable after taking into account ideal affect. For example, as seen in Table 2, the correlation between perceived utility of other-serving positive emotions and depression is bolded and italicized because the association remained significant even after taking into account the actual experience of other-serving positive emotions and ideal affect of those same emotions, respectively.

As seen in Table 2, even after accounting for the actual experience of emotion, roughly half of the significant associations between emotion groupings of the PAUSE-r and individual difference measures remained significant. This is noteworthy, given the wealth of research that has focused on emotional experience and has found that emotional experience is strongly associated with a range of individual difference variables. In particular, the associations between

perceived utility of other-serving positive emotions and individual difference variables remained significant even after accounting for the actual experience of those emotions. This is consistent with previous research suggesting that perceived utility of those emotions are important in understanding depression and potentially other individual difference variables, above and beyond the actual experience of emotion (Chow & Berenbaum, 2012; Chow et al., 2013a). In addition, even after accounting for ideal affect, nearly all of the significant associations between emotion groupings of the PAUSE-r and individual difference measures remained significant. In sum, our findings suggest that whereas the actual experience of emotion and ideal affect overlap with perceptions of emotional utility, perceived utility of emotion (as measured by the PAUSE-r) does provide at least some incremental validity in predicting individual difference variables.

As expected, the PAUSE-r not only evidenced good psychometric properties but was also highly correlated with the original PAUSE. We also found discriminant validity between the PAUSE-r and emotional experience and ideal affect, as well as evidence for incremental validity of the PAUSE-r in predicting individual difference variables. In Study 2, we examined the two-week test retest reliability of the PAUSE-r.

## Study 2

### Method

#### Participants

Participants were 89 undergraduate students (74% female; 39 European-American, 39 Asian-American, 2 African-American, 5 Latino-American, and 4 multiracial) between the ages of 18 and 25 ( $M = 19.3$ ;  $SD = 1.5$ ) at a large, Midwestern university. Participants were awarded class credit for participating. All participants provided informed consent and were fully debriefed after completing the study.

## **Procedure and Materials**

All participants completed an online version of the PAUSE-r at two different time points separated by two weeks. As described above, all emotion items related to informational utility were omitted and participants only responded to items related to motivational and behavioral utility of emotions. We measured perceived utility of the same self/other parsed and generic positive and negative emotions, as described in Study 1. The scores for the three emotions representing each emotion grouping (e.g., self-centered positive: pride, happy for self, and deserving) were averaged to provide an overall score of perceived utility of that particular emotion grouping. Across both time points, internal consistencies of the emotion grouping subscales for the PAUSE-r were good, ranging from  $\alpha = .81$  to  $.88$  (mean  $\alpha = .85$ ) at time 1, and  $\alpha = .81$  to  $.93$  (mean  $\alpha = .89$ ) at time 2.

## **Results and Discussion**

In order to examine the temporal stability of the PAUSE-r, we examined zero-order correlations between time 1 and time 2 for the same emotions groupings (e.g., correlation between self-serving positive at time 1 and self-serving positive at time 2). As predicted, effect sizes were strong, ranging from  $r = .62$  to  $.71$  (correlations for self-serving positive, self-serving negative, other-serving positive, other-serving negative, generic positive, and generic negative were  $.64$ ,  $.65$ ,  $.71$ ,  $.67$ ,  $.70$ , and  $.62$ , respectively;  $M = .67$ ). Importantly, the test-retest reliabilities of the PAUSE-r were comparable to, and on the average at least as strong as, those found in other studies examining the test-retest reliabilities of overlapping emotion constructs, such as ideal and actual affect (e.g., Tsai et al., 2006).

Having found support (in Studies 1 and 2) for the structure, validity, and reliability of the PAUSE-r in college student samples, in Study 3, in a large community sample we sought to

replicate (a) the CFA findings of the PAUSE-r; and (b) the patterns of correlations between the PAUSE-r and individual difference variables (specifically, the Big Five personality domains).

### Study3

## Method

### Participants

Participants were 274 individuals (65% female; 224 European-American, 10 Asian-American, 19 African-American, 10 Latino-American, 4 Native American, and 7 multiracial) between the ages of 18 and 73 ( $M = 36.1$ ;  $SD = 13.1$ ). Participants were recruited from an online website (www.mturk.com) and received payment in exchange for completing a series of online questionnaires.

### Instruments

*Perceived Utility of Emotion.* We used the same version of the PAUSE as is described in Study 1. Importantly, because the PAUSE-r is embedded within the PAUSE, we were able to compare the relative fit of models between these measures, as described below. Participants rated their degree of agreement on each item on a 1 (strongly disagree) to 5 (strongly agree) scale. Similar to Studies 1 and 2, we used the PAUSE to measure perceived utility of the same self/other parsed and generic positive and negative emotions. The scores for the three emotions representing each emotion grouping (e.g., self-centered positive: pride, happy for self, and deserving) were averaged to provide an overall score of perceived utility of that particular emotion grouping. Internal consistencies of the emotion grouping subscales for the original PAUSE were good, ranging from .87 to .91 (mean  $\alpha = .89$ ). Internal consistencies of the emotion grouping subscales for the PAUSE-r were also good, ranging from .80 to .87 (mean  $\alpha = .83$ ).

*Personality.* Personality was assessed using the Big Five Inventory (BFI; John, Donahue,



& Kentle, 1991). The 44-item BFI is a widely used and well-validated instrument that measures each of the five personality trait domains found in existing research (extraversion, neuroticism, agreeableness, conscientiousness, openness). The BFI consists of 44 different statements (e.g., “*is talkative*”, “*can be moody*”, “*has an assertive personality*”) that describe characteristics commonly found in people. Participants are asked to rate, on a 1 (disagree strongly) to 5 (agree strongly) scale, the degree to which each statement is characteristic of themselves. Internal consistencies of the five personality trait domains were good, ranging from .82 to .91 (mean  $\alpha = .87$ ).

## **Results and Discussion**

We began by seeking to replicate the CFA findings from Study 1. Specifically, we expected that whereas a three-facet model (PAUSE) would provide a good fit to the data, a two-facet model (PAUSE-r) would provide a comparable fit. Similar to Study 1, for each individual emotion grouping (e.g., self-serving positive), we examined the fit of the two alternative models in Figure 2. As seen in Table 1 (bottom), across all emotion groupings, both the two-facet model and the three-facet model provided a good fit to the data. In fact, in almost all cases the two-facet model fit the data just as well as the three-facet model. Importantly, these results suggest that even in a non-student sample, the structure of the PAUSE-r is valid and comparable to the PAUSE in terms of fit.

Having found support for the structure of the PAUSE-r in a non-student sample, we then proceeded to examine the correlations between the PAUSE-r and the Big Five personality domains. Specifically, we expected to find the same pattern of associations between the PAUSE-r and the Big Five personality domains as those found in Study 1. As seen in Table 3, the patterns of correlations between emotion groupings of the PAUSE-r and the Big Five personality

domains were very similar to those obtained in Study 1. For almost all significant correlations, the effect sizes obtained in this sample were greater than those obtained in Study 1.

### **General Discussion**

In three studies, we obtained evidence for the validity and reliability of the PAUSE-r. In Study 1, we used IRT to inform our decision of which items to eliminate from the original PAUSE measure, and found (using CFA) that the abbreviated PAUSE-r fit the data just as well as the original PAUSE. Further, we found compelling evidence for the convergent, discriminant, and incremental validity of the PAUSE-r. Importantly, we found that the PAUSE-r is associated with a range of individual difference variables, even after taking into account ideal affect and the actual experience of emotion. In Study 2, we found support for the temporal stability of the PAUSE-r. In Study 3, using data obtained from a large, non-student sample, we replicated findings of the structural validity of the PAUSE-r as well as the pattern of associations between the PAUSE-r and the Big Five personality domains. Taken together, we believe these studies provide a robust test of the psychometric properties of the PAUSE-r, which has the potential to contribute greatly to our understanding of personality traits and individual difference variables.

In the current research we present evidence for the potential usefulness of the PAUSE-r in understanding a range of individual differences. We believe that the PAUSE-r affords researchers the opportunity to measure perceptions of emotional utility both quickly and accurately, and that widespread inclusion of this measure will make significant contributions to numerous areas of psychological research. In addition to applications in basic research, we believe the PAUSE-r has clinical utility. For example, research has found that perceptions of emotional utility are linked to depression, even after taking into account felt affect (e.g., Chow et al., 2013a). Importantly, beliefs regarding emotion play a prominent role in numerous forms of

psychopathology. For example, much work has examined the role of beliefs about worry in pathological worry and Generalized Anxiety Disorder (e.g., Berenbaum, 2010; Borkovec, 1994; Borkovec & Roemer, 1995). To date, the vast majority of clinical researchers examining the role of emotion in psychopathology have either: (a) used measures of felt affect, such as the PANAS (Watson et al., 1988), to examine specific types of emotions; (b) used entire measures devoted to single emotion constructs, such as those related to worry (e.g., Why Worry-II; Holowka, Dugas, Francis, & Laugesen, 2000) or anxiety (State-Trait Anxiety Inventory; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983; and/or (c) examined broad emotion constructs, such as emotion regulation (ERQ; Gross & John, 2003) and affect intensity (AIM; Larsen et al., 1986). Importantly, the PAUSE-r not only allows researchers and clinicians the opportunity to examine individual differences in perceptions of emotional utility, but also of specific types of emotions (e.g., anger, fear, pride, appreciation). In addition, the brevity of the PAUSE-r enables researchers and clinicians to measure perceived utility of different types of emotions with minimal time commitment.

In addition to those already mentioned, we have several suggestions for future research. Although in the present research we introduce a self-report measure aimed at assessing perceptions of emotional utility, we also encourage future research to assess this construct using different methods. Indirect measures may allow researchers to assess implicit processes and information outside of conscious awareness. For example, existing research suggests that performance on a handgrip task is associated with perceptions of emotional utility (Chow, Berenbaum, & Flores, 2013b). Finally, future research may wish to develop alternative self-report measures of perceived utility of emotion and related constructs. Although the study of felt affect has informed researchers of a great deal in human functioning, increased examination of

alternative emotion constructs has great potential to expand our current knowledge of numerous human processes and outcomes.

## CHAPTER 3: PROJECT 2 AND EXAMINING THE STABILITY OF PERCEIVED UTILITY OF EMOTION ACROSS TIME AND CONTEXTS<sup>1</sup>

Whereas existing research supports the validity and utility of perceived utility of emotion (e.g., Chow & Berenbaum, 2012; Chow et al., 2013; Tamir, Chiu, & Gross, 2007; Tamir, Mitchell, & Gross, 2008), we currently know very little regarding its stability across different contexts and across time. In the present research, we contribute to the existing literature by examining: (a) the association between perceived utility of emotion and goals; and (b) the temporal and contextual stability (as related to goals) of the perceived utility of emotion.

### *Perceived Utility of Emotion*

Research has found that attitudes towards emotions are associated with a range of outcomes, such as emotion regulation, situation selection, and emotional reactions (Harmon-Jones et al., 2011). Perceived utility of emotion, a cognitive-affective construct, focuses on appraisals of emotions in terms of how useful an emotion is in goal pursuit. Indeed, existing research has shown that emotions can be conceptualized as having motivational processes that are instrumental to attaining goals (Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008; Zeelenberg & Pieters, 2006). In the framework of perceived utility of emotion, one's goals play a central role in how an emotion is perceived and valued. The more important an emotion is believed to be useful in achieving a specific goal, the higher the perceived utility of that particular emotion. For example, those with goals associated with independence and gaining status are likely to perceive as particularly useful those emotions that have been found to be linked to self-promotion, such as anger and pride (e.g., Chow & Berenbaum, 2012; Haidt, 2003;

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<sup>1</sup> This research was completed with the assistance of Howard Berenbaum and Luis E. Flores, Jr., both of whom are listed as co-authors in the original manuscript.

Kitayama, Markus, & Kurokawa, 2000; Mascolo & Fischer, 1995; Tangney, Stuewig, & Mashek, 2007). In contrast, those with goals associated with maintaining relationships and promoting societal values are likely to perceive as particularly useful those emotions that have been found to be linked to interpersonal processes, such as appreciation/gratitude, embarrassment, and guilt (e.g., Adler & Fagley, 2005; Emmons & McCullough, 2003; Eisenberg, 2000; Tangney et al., 2007). Existing research in utilitarian considerations in emotion (e.g., Tamir et al., 2007, 2008; Tamir & Ford, 2012) has primarily focused on: (a) approach-avoidance emotions (e.g., fear, anger); and (b) the role of utilitarian considerations of emotion in emotion regulation. In the present research we focused on: (a) an alternative emotion parsing (described below); and (b) the construct of perceived utility of emotion as an individual difference variable.

#### *Goals, Individual Differences, and Emotion Groupings*

In the current research, we not only tested the relation between perceived utility of emotion and contexts/goals, but also examined its temporal stability. In other words, we examined whether perceived utility of emotion can be treated as a stable individual difference variable. The conceptualization of “goals” in the current study was based on existing research on strivings (e.g., Emmons, 1986; Emmons & King, 1988), which are defined as “recurring, enduring goals that individuals seek in their everyday behavior” (Emmons, 1986, p. 455). Past research has found that despite individual differences in the configuration of strivings, personal strivings can be conceptualized as nomothetic, such that all individuals possess (to varying degrees) strivings related to the same broad motivations (e.g., affiliation, power; Emmons, 1986). In the current research, we examined goals related to achieving independence/promoting oneself versus goals related to achieving interdependence/maintaining relationships.

To date, much research has divided emotions into one of two sets of groupings: (a) positive approach, negative approach, positive avoidance, negative avoidance (e.g., Carver, 2001); and (b) positive high arousal, negative high arousal, positive low arousal, negative low arousal (e.g., Larsen & Diener, 1992; Tsai, Knutson, & Fung, 2006). Despite the popularity of these emotion groupings, other emotion conceptualizations are likely to be equally valid depending on the goals in question. Given the goals examined in the current research (i.e., achieving independence/promoting oneself, achieving interdependence/maintaining relationships), we used a parsing of emotion that focuses on considerations in interpersonal functioning. Specifically, we examined a parsing of emotion that differentiates emotions based on the following two dimensions: (a) positive versus negative valence; and (b) self-serving versus other-serving (we will refer to this particular two-dimension parsing as self/other parsed emotions; Chow & Berenbaum, 2012; Chow et al., 2013). This allowed us to generate the following emotion groupings: self-serving positive, self-serving negative, other-serving positive, other-serving negative. “Self-serving” emotions (e.g., pride in oneself, anger at others) serve primarily to protect and inflate one’s esteem (Chow & Berenbaum, 2012; Chow et al., 2013), and existing research has found that emotions like pride, anger, and those that are associated with an independent self-construal are generally linked to disengagement from others (e.g., Kitayama et al., 2000). In contrast, “other-serving” emotions (e.g., appreciation, shame) serve the primary functions of putting the needs of others above one’s own self and one’s self-esteem (Chow & Berenbaum, 2012; Chow et al., 2013). Existing research has found that emotions like respect, shame, guilt, and those that are associated with an interdependent self-construal are generally linked to engagement with others (Kitayama et al., 2000).

### *Study Hypotheses*

In two studies, we examined the link between perceived utility of emotion and different types of goals. Our hypotheses in Study 1 were twofold. First, we hypothesized that: (a) individuals' perceptions of emotional utility would be influenced by goals presented to them; and (b) perceptions of emotional utility would be a relatively stable individual difference variable. Second, we hypothesized that perceived utility of *self-serving* emotions would be higher in *independent* contexts than perceived utility of other-serving emotions, whereas the perceived utility of *other-serving* emotions would be higher in *interdependent* contexts than perceived utility of self-serving emotions. Our hypotheses in Study 2 were twofold. First, we expected to extend our findings from Study 1 in a daily diary study. Specifically, we expected that perceptions of emotional utility would be a relatively stable individual difference variable that would also be influenced by context/goals. Second, we hypothesized that perceived utility of emotion would be related to the types of goals individuals reported having, and that both perceptions of emotional utility and goals would be relatively stable over time. Specifically, we predicted that perceived utility of self-serving emotions would be higher for independent-related goals than perceived utility of other-serving emotions, whereas the perceived utility of other-serving emotions would be higher for interdependent-related goals than perceived utility of self-serving emotions.

## Study 1

### Method

#### Participants

Participants were 357 undergraduate students (61% female; 69% European-American, 17% Asian-American, 7% African-American, 3% Latino-American, and 5% Multiracial) between the ages of 18 and 27 ( $M = 19$ ;  $SD = 1.3$ ) at a large, Midwestern university.



Participants were awarded class credit for participating. All participants provided informed consent and were fully debriefed after completing the study.

### **Procedure and Materials**

Participants were told that they would be presented with four different types of goals that everyone has to some degree. They were presented with two independent goals (*outperforming others, having control or power over others*) and two interdependent goals (*getting along with others, being concerned about others*). Participants were asked to imagine that they were trying to achieve the goal that was presented and, for each goal, were asked to rate the degree to which different emotions were useful in terms of their: (a) informational utility (e.g., *Feeling [discrete emotion] lets me know how well or poorly I'm doing in achieving the goal of getting along with others*); (b) motivational utility (e.g., *Feeling [discrete emotion] motivates me to achieve the goal of getting along with others*); and (c) ability to influence behavior (e.g., *Feeling [discrete emotion] makes it easier for me to do things that will help me to achieve the goal of getting along with others*). Participants rated the extent to which they agreed with each statement on a 1 (strongly disagree) to 5 (strongly agree) scale.

We measured perceived utility of self/other parsed and generic positive and negative emotions. Specifically, we assessed three positive self-serving emotions (happy for self, proud, deserving), three positive other-serving emotions (appreciative, humble, respectful), three generic positive emotions (glad, pleased, cheerful), three negative self-serving emotions (angry at others, disgusted with others, jealous), three negative other-serving emotions (ashamed of myself, guilty, embarrassed of myself), and three generic negative emotions (afraid, sad, miserable). For each context, scores for the three emotions representing each emotion grouping (e.g., self-serving positive: pride, happy for self, and deserving) were averaged to provide an

overall score of perceived utility of that particular emotion grouping. For each of the four contexts, internal consistency of the emotion grouping subscales were good, ranging from .74 to .89 (mean  $\alpha = .84$ ). In order to examine perceptions of emotional utility in independent versus interdependent contexts, we averaged scores across the same emotion grouping (e.g., self-serving positive) for the following pairs of goals: (a) *outperforming others* and *having control or power over others*; and (b) *getting along with others* and *being concerned about others*.

Participants then completed a measure (based on the design of the PANAS; Watson, Clark, & Tellegen, 1988) assessing the actual experience of the emotions mentioned above. Participants were asked to rate (1 = very slightly or not at all; 5 = extremely) the degree to which they typically experienced, on the average, each emotion state (e.g., jealous, sad). Similar to the measure above, we computed a score for each emotion grouping (i.e., self-serving positive, self-serving negative, other-serving positive, other-serving negative, generic positive, generic negative) by averaging across their associated emotion items. Internal consistency (Cronbach's Alpha) of emotion groupings ranged from .71 to .83 (mean  $\alpha = .74$ ).

## **Results and Discussion**

We began by examining, using analyses of variance (ANOVA) (using, for each emotion grouping, a single average perceived utility score/item for each type of context), how much of the variance in perceived utility of emotions was attributable to: (a) context (i.e., independent vs. interdependent); and (b) individual differences (i.e., individual participants). To determine the amount of variance attributed to context, we divided the sum of squares for between-context by the total sum of squares. To determine the amount of variance attributed to individual differences, we divided the between-people sum of squares by the total sum of squares. As seen in Table 4 (left side), for each emotion grouping, the majority of the variance in scores was

attributed to differences between participants, such that individuals differed in the degree to which they perceived different types of emotions as being useful. Further, in many cases a fair amount of variance in scores was also attributed to differences between contexts.

Next, we examined whether the perceived utilities of different emotions varied as a function of the type of context. In other words, we tested our hypotheses that: (a) perceived utility of self-serving emotions would be higher for independent contexts than other-serving emotions; and (b) perceived utility of other-serving emotions would be higher for interdependent contexts than self-serving emotions. We conducted a repeated measure ANOVA separately for all positive and all negative emotions. For positive emotions, we computed a 3 (within-subject emotion: self-serving positive vs. other-serving positive vs. generic positive) x 2 (within-subject context: independent vs. interdependent) ANOVA. In terms of negative emotions, we computed a 3 (within-subject emotion: self-serving negative vs. other-serving negative vs. generic negative) x 2 (within-subject context: independent vs. interdependent) ANOVA. As expected, there was a significant emotion x context interaction for both positive ( $F(2, 352) = 322.56, p < .01$ ) and negative ( $F(2, 352) = 218.87, p < .01$ ) emotions. As seen in Figure 3, for both positive (top panel) and negative (bottom panel) emotions, perceived utility of self-serving emotions was higher in independent versus interdependent contexts than was perceived utility of other-serving and generic positive/negative emotions. Similarly, perceived utility of other-serving emotions was higher in interdependent versus independent contexts than was perceived utility of self-serving and generic positive/negative emotions.

To further test our hypotheses that: (a) perceived utility of self-serving emotions would be highest for independent contexts; and (b) perceived utility of other-serving emotions would be highest for interdependent contexts, we computed four separate, one-way ANOVAs using the

following groups of within participants variables: (a) perceived utility of self-serving positive, other-serving positive, and generic positive emotions in independent context; (b) perceived utility of self-serving positive, other-serving positive, and generic positive emotions in interdependent context; (c) perceived utility of self-serving negative, other-serving negative, and generic negative emotions in independent context; and (d) perceived utility of self-serving negative, other-serving negative, and generic negative emotions in interdependent context. As expected, for positive emotions, there was a significant effect of emotion groupings for both independent ( $F(2, 353) = 446.43, p < .01$ ) and interdependent contexts ( $F(2, 353) = 34.66, p < .01$ ). Similarly, for negative emotions, there was a significant effect of emotion groupings for both independent ( $F(2, 353) = 451.43, p < .01$ ) and interdependent contexts ( $F(2, 352) = 73.10, p < .01$ ). We then conducted follow-up paired comparison t-tests using Bonferroni corrections (setting alpha at  $.05/3=.02$ ). As expected, for positive emotions in independent context, perceived utility of self-serving positive emotions was significantly higher than other-serving positive ( $t(353) = 25.78, p < .01$ ) and generic positive emotions ( $t(353) = 22.12, p < .01$ ). For positive emotions in interdependent context, perceived utility of other-serving positive emotions was significantly higher than self-serving positive ( $t(353) = 7.79, p < .01$ ) and generic positive emotions ( $t(353) = 4.61, p < .01$ ). For negative emotions in independent context, perceived utility of self-serving negative emotions was significantly higher than other-serving negative ( $t(353) = 19.50, p < .01$ ) and generic negative emotions ( $t(353) = 25.60, p < .01$ ). For negative emotions in interdependent context, perceived utility of other-serving negative emotions was significantly higher than self-serving negative ( $t(353) = 5.39, p < .01$ ) and generic negative emotions ( $t(353) = 12.66, p < .01$ ).

### *Robustness of Findings*

To determine whether our findings were merely an artifact of felt affect, we reran the analyses above after taking into account the actual experience of emotion. To accomplish this, we computed difference scores for each emotion grouping by subtracting scores of actual affect from scores of perceived utility of emotion. As seen in Table 4 (right side), even after taking into account the actual experience of emotion the results were quite similar. Similar to the previous findings, the majority of the variance in scores was attributed to individual differences in the degree to which people perceived different types of emotions as being useful. In addition, a fair amount of variance in scores was also attributed to differences between contexts, particularly for other-serving positive and self-serving negative emotions. Importantly, the results from the repeated measures ANOVAs were strikingly similar to our original findings. As expected, there was a significant emotion x context interaction for both positive ( $F(2, 351) = 320.35, p < .01$ ) and negative ( $F(2, 351) = 218.68, p < .01$ ) emotions. In terms of the one-way ANOVAs, there was a significant effect for positive emotion groupings for independent context ( $F(2, 352) = 338.04, p < .01$ ), and a moderate, albeit not quite significant, effect for interdependent context ( $F(2, 352) = 2.77, p = .06$ ). There was a significant effect for negative emotion groupings for both independent ( $F(2, 352) = 148.65, p < .01$ ) and interdependent contexts ( $F(2, 352) = 41.96, p < .01$ ).

Follow-up paired comparison t-tests using Bonferroni corrections were also strikingly similar to our original findings. For positive emotions in independent context, perceived utility of self-serving positive emotions was significantly higher than other-serving positive ( $t(352) = 22.65, p < .01$ ) and generic positive emotions ( $t(352) = 18.95, p < .01$ ). For positive emotions in interdependent context, perceived utility of other-serving positive emotions was strongly, albeit not quite significantly, higher than self-serving positive ( $t(352) = 1.96, p = .05$ ) and generic

positive emotions ( $t(352) = 1.86, p = .06$ ). For negative emotions in independent context, perceived utility of self-serving negative emotions was significantly higher than other-serving negative ( $t(352) = 10.89, p < .01$ ) and generic negative emotions ( $t(352) = 15.33, p < .01$ ). For negative emotions in interdependent context, perceived utility of other-serving negative emotions was significantly higher than self-serving negative ( $t(352) = 8.03, p < .01$ ) and generic negative emotions ( $t(1, 352) = 8.07, p < .01$ ).

Taken together, these findings support the notion that our original results were not merely an artifact of the actual experience of emotion, and further support the potential importance of examining perceptions of emotional utility as a separate and unique construct. We conducted Study 2 to (a) replicate these findings using a “daily diary” study design and using data compiled from real life experiences; and (b) to examine the relationship between perceptions of different types of emotions and goals/contexts over time.

## Study 2

### Method

#### Participants

Participants were 124 undergraduate students (64% female; 60% European-American, 24% Asian-American, 4% African-American, 9% Latino-American, and 3% Multiracial) between the ages of 18 and 22 ( $M = 19$ ;  $SD = 1.1$ ). Participants were awarded class credit for participating. All participants provided informed consent and were fully debriefed after completing the study.

#### Procedure

Participants were told that they would participate in a study examining the relationship between emotions and daily experiences. The study design was similar to those of other “daily

diary” studies, in which participants are asked to respond to a series of questions on a daily basis. In the current study, participants were asked to respond to online questions every day for six days. Emails containing links to the online questionnaires were emailed to participants at the same time (7pm) every day and participants were given twelve hours to complete each online questionnaire.

Participants responded to the same set of online questions every day. They were first instructed to “think about a time today when you were trying to accomplish a goal (e.g., stick to my diet, do well on my psychology exam, have a good time with my friends, make others feel welcome).” Participants were then asked to rate (0 = not at all; 5 = extremely) the degree to which the goal they thought of was characterized by each of the following dimensions: (a) *gaining personal prestige, increasing personal competence, or being independent*; (b) *gratifying your own physical needs, or being mentally/emotionally stimulated*; (c) *understanding and assisting in the welfare of others/society, or maintaining harmonious relationships*; and (d) *following cultural, societal, or religious values, or controlling your personal desires/impulses*. Importantly, these dimensions were based on values research by Schwartz and colleagues (e.g., Schwartz, 1992, 1994; Schwartz & Bardi, 2001). Whereas research has identified ten different, yet related, values that have been replicated in numerous countries (Schwartz, 1992), in the present research we combined related values to broadly form the four dimensions listed above. Internal consistency across days for each dimension was good ( $\alpha = .74, .75, .81, \text{ and } .83$ ).

Participants were then asked to rate (0 = not at all; 5 = extremely) the degree to which experiencing eight different emotions would have been useful to them at the time when they were trying to accomplish their goals. We assessed two self-serving positive emotions (pride for self, deserving), two other-serving positive emotions (appreciation, humility), two self-serving

negative emotions (anger at others, disgust with others), and two other-serving negative emotions (shame, guilt). Finally, participants were asked to rate (0 = not at all; 5 = extremely) the degree to which they *actually* experienced the same eight emotions listed above.

## **Results and Discussion**

We began by testing whether we would replicate the findings from Study 1. We examined, using analyses of variance (separately for each emotion grouping across each of the six days), how much of the variance in perceived utility of emotions was attributable to: (a) context (i.e., four goal dimensions); and (b) individual differences (i.e., individual participants). Similar to Study 1, to determine the amount of variance attributed to context, we divided the sum of squares for between-context by the total sum of squares. To determine the amount of variance attributed to individual differences, we divided the between-people sum of squares by the total sum of squares. As seen in Table 5 (left side), for each emotion grouping, the majority of the variance in scores was attributed to differences between participants, such that individuals differed in the degree to which they perceived different types of emotions as being useful. In contrast, the amount of variance in scores attributed to differences between contexts/goals was marginal.

We then proceeded to examine the relationship between perceived usefulness of different types of emotions and goals over time. In other words, we tested our hypotheses that: (a) for independent and stimulating contexts, perceived utility of self-serving emotions would be higher than other-serving emotions; and (b) for interdependent and relational contexts, perceived utility of other-serving emotions would be higher than self-serving emotions. We accomplished this by conducting multilevel modeling using the MIXED procedure of the SAS 9.3 software. We constructed two-level multilevel models for each pairing of emotion groupings (e.g., self-serving



positive emotions) and goal types (e.g., stimulation). Each model was conducted with a REPEATED statement for day of daily entry. As suggested by Enders and Tofighi (2007), each perceived utility of emotion grouping variable was group centered (i.e., each daily score was subtracted by the participant's weekly mean) to focus on within-subject variance. A generic version of these models can be seen below:

*Level 1:*

$$\text{Goal Type}_{ij} = \beta_{0j} + \beta_{1j}(\text{Perceived Utility of Emotion Grouping}) + r_{ij}$$

*Level 2:*

$$\beta_{0j} = \gamma_{00}$$

$$\beta_{1j} = \gamma_{10}$$

As seen in Table 6, the pattern of our results largely supported our hypotheses. As expected, perceived utility of self-serving positive emotions was significantly positively associated with goals related to establishing independence/ gaining personal prestige, and gratifying personal needs/ being stimulated ( $t(509) = 2.51, p < .05$ , and  $t(523) = 2.44, p < .05$ , respectively). Perceived utility of self-serving negative emotions was also significantly positively associated with the goal of gratifying personal needs/ being stimulated ( $t(519) = 3.90, p < .01$ ) and was positively (albeit not significantly) associated with the goal of establishing independence/gaining personal prestige ( $t(524) = 1.58, p = .12$ ). In contrast, perceived utility of other-serving positive emotions was significantly positively associated with the goal of assisting others/maintaining relationships ( $t(515) = 7.62, p < .01$ ), and was positively (albeit not significantly) associated with the goal of following cultural values/inhibiting personal desires ( $t(505) = 1.44, p = .15$ ). As expected, perceived utility of those same emotions was also negatively associated with goals related to independence/personal prestige and gratifying

personal needs, although neither of those effects were quite significant ( $t(506) = -1.81, p = .07$ , and  $t(509) = -1.42, p = .16$ , respectively). Finally, perceived utility of other-serving negative emotions was significantly positively associated with the goal of cultural values/inhibiting personal desires ( $t(495) = 2.53, p < .05$ ). Surprisingly, perceived utility of those same emotions was significantly negatively associated with the goal of assisting others/maintaining relationships ( $t(504) = -1.98, p < .05$ ).

### *Robustness of Findings*

To determine whether our findings were merely an artifact of felt affect, we reran the analyses above after taking into account felt affect. Similar to Study 1, we computed difference scores for each emotion grouping by subtracting scores of actual affect from scores of perceived utility of emotion. As seen in Table 5 (right side), even after taking into account the actual experience of emotion the results were quite similar. Similar to the previous findings, the majority of the variance in scores was attributed to individual differences in the degree to which people perceived different types of emotions as being useful.

For the multilevel modeling analyses, we added the actual experience of emotion as an additional predictor variable in the models described above. For example, to examine whether perceived utility of other-serving positive emotions was associated with the goal of assisting others/maintaining relationships, even after taking into account the actual experience of those emotions, we entered (a) the perceived utility of other-serving positive emotions; and (b) the actual experience of those emotions, as simultaneous independent variables in the same model. As with the previous models, both level 1 predictor variables were group centered. A generic version of these models can be seen below:

#### *Level 1:*

$$\text{Goal Type}_{ij} = \beta_{0j} + \beta_{1j}(\text{Perceived Utility of Emotion Grouping}) + \beta_{2j}(\text{Actual Experience of Emotion Grouping}) + r_{ij}$$

*Level 2:*

$$\beta_{0j} = \gamma_{00}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

Italicized cells in Table 6 indicate a significant association between perceived utility of an emotion grouping and a particular goal dimension, even after taking into account the actual experience of emotion. For example, as seen in Table 6, the association between perceived utility of other-serving positive emotions and the goal dimension of assisting others/maintaining relationships is italicized because the association remained significant even after taking into account the actual experience of those same emotions. As seen in Table 6, even after accounting for the actual experience of emotion, most of the significant associations between perceived utility of emotion and goal dimensions remained significant.

## **General Discussion**

Our findings suggest that, similar to the actual experience of emotion, perceived utility of emotion possesses both trait-like and goal-influenced properties. Our finding that perceived utility of specific types of emotions was associated with specific types of goals is consistent with previous research. For example, studies in emotion regulation have found that individuals will choose to increase their experience of specific negative emotions (e.g., fear) if they think that doing so will be useful to them in achieving certain types of goals (e.g., avoiding danger; Tamir et al., 2007, 2008; Tamir & Ford, 2012). However, whereas existing research has primarily employed the use of cross-sectional and experimental designs in assigning goals to individuals,

we were able to examine the relation between organically derived goals and perceived utility of emotion in a naturalistic, “daily diary” study. We believe this allows us to be more confident in the ecological validity of our findings.

In addition to goal-specific properties, our findings suggest that there are relatively stable individual differences in the degree to which people perceive various types of emotions as being useful. Importantly, this is consistent with: (a) past research which has found that perceived utility of emotion is associated with personality and individual difference variables (Chow & Berenbaum, 2012; Chow et al., 2013); and (b) our theorizing that perceived utility of emotion is valuable to the extent that it facilitates the attainment of goals. Research on goals and strivings has found that there are stable individual differences in terms of the goals and strivings people endorse (e.g., Emmons, 1986). Indeed, consistent with existing research we obtained high reliabilities of goal dimensions in Study 2. We theorize that the relative stability of perceived utility of emotion can be largely attributed to the stability of individual goals. Thus, to the degree that one’s goals change over time, we would also expect to find corresponding changes in perceived utility of emotion. One fascinating question for future research is to examine the degree to which goals and perceived utility of emotion influence one another over time. For example, having the goal of maintaining relationships might lead one to perceive other-serving emotions (e.g., appreciation, guilt) as being particularly useful. In contrast, perceiving other-serving emotions as being useful might lead one to excel in forming and maintaining relationships, which would then become an important goal in one’s life.

In addition to those already mentioned, we have several suggestions for future research. Contrary to our expectations, in Study 2, perceived utility of other-serving negative emotions was significantly negatively associated with the goals of assisting others/maintaining

relationships. One explanation is that whereas guilt and embarrassment are widely considered to be associated with prosocial behaviors and intentions, shame is not (Baumeister, Stillwell, & Heatherton, 1994; Feinberg et al., 2012; Tangney et al., 2007). Alternatively, it may be that the types of interpersonal goals participants recalled were incompatible with perceived utility of other-serving negative emotions. Participants may also have been more resistant to endorsing negative emotions as being useful to them. Future research may wish to examine this finding and related issues more closely. Further, future research may wish to use samples drawn from non-student populations. Although the current research employed a “daily diary” design, which allowed us to gauge the temporal stability of perceived utility of emotion as well as its relation with different types of goals, we acknowledge the importance of experimental designs in examining cause-and-effect relationships between perceived utility of emotion, goals, and behavior. We encourage future research to continue utilizing both methods in examining this phenomenon. We also recommend that researchers explore the use of indirect measures of perceived utility of emotion. Although such an approach may be difficult in a longitudinal, or “daily diary” study design, one may be more confident in their findings to the degree that results from indirect measures and direct measures converge.

## CHAPTER 4: PROJECT 3 AND EXAMINING THE ROLE OF PERCEIVED UTILITY OF EMOTION IN AN INTERPERSONAL CONTEXT<sup>1</sup>

Emotion research has demonstrated that positive emotions are associated with flexible thinking, optimism, well-being, and behaviors that lead to positive outcomes (e.g., Lyubomirsky, King, & Diener, 2005; Tugade, Fredrickson, & Feldman Barrett, 2004). Increasingly, researchers have been going beyond examining general positive affect to examining the effects of specific positive emotions, such as joy, pride, and gratitude (Berenbaum, 2002; Ellsworth & Smith, 1988; Emmons & McCullough, 2003; Lazarus, 1991; Tracy & Robins, 2007). However, relative to the vast majority of research that has examined the actual experience of positive emotions, our understanding of the potential importance of other emotion constructs in human functioning is quite limited. We sought to contribute to the literature by examining the potential importance of perceptions of emotional utility (Chow & Berenbaum, 2012; Tamir, Chiu, & Gross, 2007; Tamir & Ford, 2012) in attributions and intentions in an interpersonal context. Further, the two positive emotions that were the focus of the present research, pride and appreciation (or gratitude), have been found to be important in human functioning (e.g., Adler & Fagley, 2005; Algoe & Haidt, 2009; Williams & DeSteno, 2008, 2009; Tracy & Robins, 2007; Tsang, 2006) but to date have received only a fraction of the attention that has been given to positive affect as a whole. The goal of the present research was to examine whether, due to their contrasting natures, priming schemas for pride and appreciation, with a focus on their potential usefulness, would lead to differences in attributions and intentions after receiving critical feedback.

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<sup>1</sup> This research was completed with the assistance of Howard Berenbaum and Maya Tamir, both of whom are listed as co-authors in the original manuscript.

### *Emotion Schemas and Discrete Emotions*

Research demonstrates that emotions, which are not merely feeling states, are linked to schemas composed of complex cognitive processes and appraisals (e.g., Ortony, Clore, & Collins, 1988; Roseman, 2004). Researchers have also found that affect provides a constant source of information and serves as input in the evaluations and judgments people make (e.g., Greifeneder, Bless, & Pham, 2011). In addition to research that has focused broadly on positive (or negative) affect as a whole, there is evidence that specific types of emotions are linked to distinct cognitive processes and behaviors (e.g., Ellsworth & Smith, 1988; Manstead, Tetlock, & Manstead, 1989; Roseman, 1991; Roseman, Swartz, & Tamara, 1994). For example, in a recent meta-analytic study, Lench, Flores, and Bench (2011) found support for discrete emotions being associated with specific changes in cognition, judgment, behavior, experience, and physiology. Thus, there is ample support for the notion that discrete emotions, above and beyond general positive (and negative) affect, play a role in cognitive processing through activation of their respective schemas. As will be discussed below, one way in which schemas of specific positive emotions may differ is through differences in their perceived usefulness.

A strong tradition of research demonstrates that emotions can serve a range of useful functions across many different contexts (e.g., Frijda, 1988). For example, whereas experiencing anger may be useful in confronting others, experiencing fear may be useful in avoiding threats (e.g., Tamir, Mitchell, & Gross, 2008). More recent research in emotional utility demonstrates that beliefs regarding the usefulness of specific types of emotions, which are influenced by context, actually impact people's behavior such as the emotions they choose to experience and aspects related to their performance (e.g., Tamir et al., 2007, 2008; Tamir & Ford, 2012). Thus, perceptions of emotional utility may be an important factor in understanding emotion schemas

and how they impact cognition and behavior. In the present research, we hypothesized that that if pride and appreciation are indeed useful in different contexts (e.g., competitive work environment vs. building relationships, respectively), priming mental representations of those emotions, with a focus on their perceived usefulness, should lead to measured differences in attributions and intentions.

Whereas some researchers argue for the existence of a small number of fundamental, basic emotions, such as anger and happiness (e.g., Ekman, 1992), others conceptualize emotions more broadly (e.g., valenced cognitive appraisals that lead to feeling states; Ortony et al., 1988) and argue for a much larger and more diverse set of emotions. In line with this latter tradition, many different types of positive (and negative) emotions have been proposed (e.g., interest, love, challenge, pride, appreciation; Berenbaum, 2002; Ellsworth & Smith, 1988; Lazarus, 1991), and existing research in discrete emotions has contributed greatly to our understanding of human functioning. For example, ample research has examined the importance of anger, shame, and guilt in understanding brain processes, cognition, and behavior (e.g., Carver & Harmon-Jones, 2009; Stuewig, Tangney, Heigel, Harty, & McCloskey, 2010). Whereas the majority of research in discrete emotions has examined the actual experience of negative emotions (e.g., shame, guilt) and positive emotions (e.g., pride, gratitude), in the current research we examined the potential importance of perceptions of the utility of discrete emotions.

### *Pride and Appreciation*

In addition to the popular and valid conceptualization of emotions as being positively versus negatively valenced (e.g., Feldman Barrett & Russell, 1999), many other aspects of emotions have received considerable attention from researchers. For example, researchers have found that whereas some emotions serve to focus people inwardly, other emotions serve to focus



people outwardly (e.g., Green, Sedikides, Saltzberg, Wood, & Forzano, 2003). As will be discussed in greater detail below, we based our hypotheses regarding pride and appreciation on research examining the role of emotions in interpersonal functioning. For example, whereas pride has been conceptualized as interpersonally disengaged, self-serving, and self-conscious, appreciation (or gratitude) has been conceptualized as interpersonally engaged, other-serving, and other-praising (Chow & Berenbaum, 2012; Haidt, 2003; Kitayama, Markus, & Kurokawa, 2000).

Pride is theorized to have evolved as a means of signaling status in social settings (Tracy & Robins, 2007; Tracy, Shariff, & Cheng, 2010) and has been found to be linked to appraisals of self-worth and interpersonal dominance (e.g., Tangney, Stuewig, & Mashek, 2007; Williams & DeSteno, 2009). Researchers examining pride usually differentiate between two facets of pride: authentic pride (associated with achievement and adaptive outcomes) versus hubristic pride (associated with self-aggrandizement/narcissism and maladaptive outcomes; Carver, Sinclair, & Johnson, 2010; Tangney, 1999; Tracy & Robins, 2007; Tracy et al., 2010). In the current research we focused on authentic pride, although recent research and theory suggests that authentic and hubristic pride are not in fact distinct emotions and overlap in many ways, such as in their expression and appraisal structure (e.g., Tracy et al., 2010). Research examining authentic pride, which is associated with achievement, genuine self-esteem/self-worth, accomplishment, and confidence (e.g., Carver et al., 2010; Tracy & Robins, 2007; Tracy, Cheng, Robins, & Trzesniewski, 2009), has found that it can be beneficial in certain contexts, such as those related to objective success (Williams & DeSteno, 2008, 2009). For example, studies have found that authentic pride motivates people to persevere despite initial costs, and even leads individuals to assume leadership roles and to receive favorable ratings from their peers in a

group context (Williams & De Steno, 2008, 2009). Although authentic pride is generally considered to be adaptive, as a facet of pride it nonetheless shares many of the overarching properties found in the larger construct of pride, such as signaling social status and being related to self-worth and self-esteem. Thus, from a functional perspective, authentic pride is likely to be more beneficial in some contexts than in others. For example, whereas authentic pride is likely to facilitate good outcomes in competitive work environments and academic achievement (e.g., Williams & DeSteno, 2008, 2009), when compared to an emotion like appreciation (as described below), authentic pride may lead to relatively poorer outcomes (and less benevolent attributions and intentions) in interpersonal contexts involving critical feedback from others.

In the current study we also examined the relatively overlooked emotion of appreciation (which shares many similarities to the more popular construct of gratitude). Our intention in examining appreciation was to draw attention to and expand knowledge regarding this emotion while also contributing to the literature on gratitude. Whereas gratitude is often conceptualized specifically in relation to interpersonal functioning (acknowledging something good that another person has done for you), appreciation is a construct which pertains more broadly to thankful recognition and which also has implications in understanding interpersonal functioning (e.g., one may be grateful for, or appreciative of, constructive criticism from others). Thus, to the degree that appreciation and gratitude are linked to interpersonal functioning, one may reasonably assume these constructs to be largely overlapping and for findings related to one construct to be informative in understanding the other (in fact, some have argued that appreciation and gratitude can be conceptualized as a unitary construct; Wood, Maltby, Stewart, & Joseph, 2008). In contrast to pride, appreciation/gratitude is conceptualized in relation to others and is at least somewhat dependent on the acknowledgement of the role of an external force, agent, or source

(e.g., Emmons & McCullough, 2003). Appreciation/gratitude, which is theorized to have uniquely evolved as a means of facilitating social exchanges and promoting reciprocal altruism in social contexts (McCullough, Kimeldorf, & Cohen, 2008), has been found to promote relationships with others and is associated with prosocial appraisals and behaviors (Adler & Fagley, 2005; Algoe & Haidt, 2009; Algoe, Haidt, & Gable, 2008; Emmons & McCullough, 2003; McCullough et al., 2008). For example, researchers have found that appreciation/gratitude is linked to an increase in helping behaviors even at great personal costs, and that this extends beyond the effects of general positive affect (Bartlett & De Steno, 2006; Tsang, 2006). Thus, in the context of receiving critical feedback, one might expect appreciation/gratitude to lead to more benevolent attributions and intentions than authentic pride.

### *Study Hypotheses*

In the current study, we sought to contribute to existing research by examining whether a manipulation of mental representations of pride and appreciation, with a focus on the perceived usefulness of those emotions, would influence attributions and intentions. For half the participants, mental representations of pride were primed, whereas for the other half of participants mental representations of appreciation were primed. Our priming of mental representations focused on the potential utility of the different emotions (i.e., priming the perceived utility of pride vs. the perceived utility of appreciation). We theorized that because appreciation is associated with building and maintaining relationships, individuals primed with a mental representation of appreciation and its usefulness would endorse more benevolent attributions and more prosocial intentions in the context of critical feedback than would individuals primed with pride and its usefulness. In contrast, we theorized that because pride is associated with self-worth and self-esteem, individuals primed with pride and its usefulness

would endorse less benevolent attributions and less prosocial behaviors in the context of critical feedback than would individuals primed with appreciation and its usefulness. Importantly, we also predicted that the degree to which individuals reported perceiving pride or appreciation to be useful would be associated with attributions and intentions, even when taking into account positive and negative affect.

## Method

### Participants

Participants were 221 undergraduate students (62% female,  $M_{\text{age}} = 19.3$ ) who participated in exchange for course credit. The majority of participants self-identified as European American (57.9%), followed by 25.8% Asian American, 8.6% Latino American, 5% African American, and 2.7% Multiracial.

### Overview

Participants were told that the study examined the link between memories, relational factors, and intelligence. They were randomly assigned to one of two emotion conditions (pride vs. appreciation). Participants in the pride condition engaged in activities intended to bring attention to pride and its potential utility, whereas participants in the appreciation condition engaged in activities intended to bring attention to appreciation and its potential utility.

To begin, participants completed a writing task in which they were asked to write a creative short story. This served as a baseline indirect measure of positive and negative affect (see below). Participants then engaged in a second writing task that served as a manipulation by having them recall a proud or appreciative memory. Participants in the appreciation group were told to write about a memory in which they felt appreciative, whereas participants in the pride group were told to write about a memory in which they felt proud. As described below,

participants then completed the emotional utility task, followed by measures of attributions and intentions (see below). Finally, participants completed a third writing task in which they were instructed to write about an event in which they received a detailed critique of their performance (e.g., academic, athletic) from a peer – this writing task served as a second indirect measure of positive and negative affect.

## Measures

*Emotional Utility Task.* There were two versions of this task: one for participants in the pride condition and one for participants in the appreciation condition. Participants in both conditions were presented with a sheet of paper containing seven leading statements, which they were told would assess the quality of memory recall. Items constructed for the pride condition (*feeling proud made me feel confident in myself and my abilities; feeling proud let me know that I was important in some way; feeling proud let others see me as strong and capable; feeling proud motivated me to work harder in order to display my abilities; feeling proud let me know that I had achieved or done something praiseworthy; feeling proud helped me to become aware of what my strengths are; feeling proud made me behave in a more confident manner*) were based on existing research indicating that authentic pride is associated with confidence, self-worth, self-esteem, achievement, and mastery of skills (e.g., Carver et al., 2010; Tracy & Robins, 2007; Tracy et al., 2009). Items constructed for the appreciation condition (*feeling appreciative allowed me to build trust with someone else; feeling appreciative kept me grounded and connected with what was happening; feeling appreciative made it more likely that others would help me in the future; feeling appreciative enabled me to be sensitive and responsive to the needs of others; feeling appreciative allowed me to see the positive aspects of a situation; feeling appreciative allowed me to learn and grow by making me more receptive to the comments and*

*behaviors of others; feeling appreciative helped me to cooperate with others*) were based on existing research indicating that appreciation/gratitude is associated with prosociality, well-being, and building and maintaining relationships (e.g., Adler & Fagley, 2005; Algoe & Haidt, 2009; Algoe, Haidt, & Gable, 2008; Emmons & McCullough, 2003; Tsang, 2006). For each statement, participants in both groups were asked to indicate whether they agreed, disagreed, or could not recall. Across both groups, the vast majority of individuals responded “agree” to each of the seven items ( $M = 89\%$ ).

*Self-Reported Perceived Utility.* After completing the emotional utility manipulation task, we assessed the degree to which participants perceived pride or appreciation (depending on the condition they were in) to be useful. Participants in the pride condition rated (1 = *not at all*; 6 = *extremely*) the degree to which feeling proud was useful to them, whereas participants in the appreciation condition rated (1 = *not at all*; 6 = *extremely*) the degree to which feeling appreciative was useful to them.

*Attributions.* We presented all participants with the same five different interpersonal scenarios (classmate, stranger, instructor, acquaintance, distant relative) involving an anonymous student named “Jessie” (e.g., the scenario involving a classmate stated that “Jessie is enrolled in a very important class. One day, after arriving early to class, Jessie is chatting with a classmate who mentions that Jessie should spend more time studying and reviewing class material, and less time socializing, in order to attain higher grades”). We used hypothetical scenarios instead of asking about personal real-life experiences in order to insure that all participants responded to identical contexts involving critical feedback. Participants were asked to imagine each scenario as if they were in Jessie’s position. In each scenario, Jessie is confronted with critical feedback from another person. Following each scenario, participants were asked to report the degree to

which they agreed (1 = *not at all*; 5 = *very much*) with four statements assessing the perceived intentions of the other person depicted in the scenario. Thus, participant responses reflected their own beliefs of each attribution in the given context. Responses to two negative statements (i.e., “*this person has malicious intentions*”, “*this person is trying to put Jessie down*”) were reverse scored and summed with responses to two positive statements (i.e., “*this person has Jessie’s best interests in mind*”, “*this person is genuinely concerned about Jessie*”). Thus, higher scores represent more benevolent attributions regarding the intentions of others and the scores across all five scenarios were averaged to provide an overall score of benevolent attributions. Internal reliability for these items across all five scenarios was acceptable (Cronbach’s  $\alpha = .80$ ).

*Intentions.* We also assessed intentions for the five scenarios described above. For each scenario, participants were asked to report the degree to which they thought Jessie would be justified (-5 = *extremely unjustified*; 5 = *extremely justified*) in engaging in a variety of behaviors. Similar to their attribution ratings, participant responses reflected their own beliefs of each intention in the given context. Responses to four negative statements (e.g., “*Jessie responds by saying ‘why don’t you mind your own business’*”, “*Jessie stares angrily at the other person*”) were reverse scored and summed with responses to four positive statements (e.g., “*Jessie responds by saying ‘thanks, I appreciate the advice and your concern’*”, “*Jessie makes eye contact with the other person and nods in order to demonstrate acknowledgement*”) to provide an overall score of intentions, with higher scores representing an endorsement of more prosocial intentions. The scores across all five scenarios were averaged to provide an overall score of prosocial intentions. Internal reliability for these items across all five scenarios was good (Cronbach’s  $\alpha = .90$ ).

*Indirect Measure of Positive and Negative Affect.* We used indirect measures of affect so as to minimize possible effects of demand characteristics. We examined positive and negative affect in the baseline and post-manipulation writing samples by examining writing sample content through a text analysis software program (Linguistic Inquiry and Word Count; Pennebaker, Booth, & Francis, 2007). This program provides scores representing the percentage of words in a given text that match target words found in various language domains. We used the LIWC scales of positive emotion and negative emotion to obtain an indirect measure of positive and negative affect. To account for Time 1 scores, we calculated difference scores (Time 2 – Time 1) for positive and negative affect.

## Results

We began by testing the hypothesis that people in the appreciation condition would endorse more benevolent perceptions and prosocial behaviors than would people in the pride condition. The results of independent samples t-tests revealed that there were significant group differences in attributions ( $t(218) = 2.63, p < .01$ ) and intentions ( $t(219) = 1.98, p < .05$ ). As seen in Figure 4, as predicted, individuals in the appreciation condition endorsed more benevolent attributions and prosocial intentions than did individuals in the pride condition.

Next, we tested whether the degree to which individuals reported perceiving pride or appreciation to be useful would be associated with attributions and intentions. We began by examining the degree to which participants in the pride condition did in fact report high levels of perceived utility of pride, and whether participants in the appreciation condition reported high levels of perceived utility of appreciation. Participants in the pride condition reported mean pride utility scores close to the extreme end of the 1-6 point scale ( $M = 4.6, SD = 1.0$ ). Likewise, participants in the appreciation condition reported mean appreciation utility scores close to the



extreme end of the 1-6 point scale ( $M = 4.9$ ,  $SD = 1.1$ ). We then we performed the critical test of our hypothesis that priming mental representations of pride and appreciation, with a focus on the perceived utility of those emotions, would lead to differences in attributions and intentions. We examined, separately *within* each emotion condition, the zero-order correlations between perceived utility of pride/appreciation and attributions and intentions. As seen in Table 7, as predicted, for individuals in the pride condition, higher perceived utility of pride was significantly negatively associated with: (a) benevolent perceptions of others; and (b) prosocial intentions. In contrast, for individuals in the appreciation condition, higher perceived utility of appreciation was significantly positively associated with: (a) benevolent perceptions of others; and (b) prosocial intentions.

Finally, we explored whether the results described above were merely artifacts of participants in the two conditions differing in mood. As expected, participants in the pride condition exhibited a significant increase in NA following criticism,  $t(109) = 2.66$  ( $p < .01$ ), whereas participants in the appreciation condition exhibited a decrease in NA following criticism,  $t(110) = 1.96$  ( $p = .053$ ). To determine whether the degree to which individuals reported perceiving pride or appreciation to be useful would be associated with attributions and intentions, even after taking into account positive and negative affect, we computed partial correlations after removing shared variance with positive and negative affect. As seen in Table 7, even after taking into account positive and negative affect, for individuals in the pride condition, higher perceived utility of pride was significantly negatively associated with: (a) benevolent perceptions of others; and (b) prosocial intentions. In contrast, for individuals in the appreciation condition, higher perceived utility of appreciation was (a) significantly positively

associated with benevolent attributions of others; and (b) strongly, albeit not significantly ( $p < .08$ ), positively associated with prosocial intentions.

### Discussion

Although researchers have increasingly been exploring the importance of specific positive emotions in human functioning, the large majority of such research has focused on the actual experience of emotion and has ignored the potential importance of other emotion constructs (e.g., perceptions of the usefulness of emotions). Our findings contribute to a growing body of literature examining utilitarian considerations in emotions and suggest that priming mental representations of discrete positive emotions, with a focus on their respective utilities, can influence attributions and intentions. As expected, in the context of critical feedback, individuals in the appreciation condition endorsed more benevolent attributions and more prosocial intentions than did individuals in the pride condition. Importantly, as predicted, we also found that the more individuals perceived appreciation to be useful, the more they endorsed benevolent attributions and prosocial intentions when compared to pride. This was true even after accounting for positive and negative affect. These findings suggest that perceptions of the usefulness of emotion, one potentially important factor in emotion schemas, are associated with thinking in more emotion-consistent ways in certain contexts and are not merely attributable to felt affect.

Ample research has found that pride and appreciation/gratitude are important in understanding aspects of human behavior and we believe our findings also contribute to existing literature by exploring some of the potential cognitive factors that may account for these findings. Although existing research demonstrates that authentic pride is generally adaptive, our findings suggest that due to considerations of utility, in certain interpersonal contexts (e.g.,

receiving critical feedback) pride may result in relatively lower endorsements of benevolent attributions of others and prosocial behaviors than appreciation. Thus, the adaptiveness of authentic pride may depend in part on the context in question. For example, whereas authentic pride may facilitate success in achievement or leadership settings (e.g., Williams & De Steno, 2008, 2009), in the context of critical feedback from others, authentic pride may lead to self-protecting patterns of thought. We believe our findings contribute research in appreciation/gratitude (e.g., Bartlett & De Steno, 2006; Emmons & McCullough, 2003) by helping to clarify and identify some of the cognitive factors that may have led to the findings of positive outcomes in the literature. Our findings suggest that appreciation/gratitude is associated with benevolent attributions and prosocial intentions, which may in turn lead to greater well-being and interpersonal functioning. One implication from the current research is that appreciation/gratitude may act as a protective factor in potentially negative contexts, such as receiving criticism from others. In addition, although we believe that our findings contribute to our understanding of gratitude, we recommend that future research continue to examine how (and in which contexts) these two constructs are both similar and different. Further, we recommend that future research continue to examine the specific contexts and potential moderators that may lead different emotions (e.g., pride, appreciation) to improve, or harm, interpersonal functioning.

A wealth of research demonstrates that emotions serve a range of uses (e.g., Frijda, 1988; Tamir & Ford, 2012; Tamir et al., 2008), and one aspect of people's schemas of specific emotions may be their usefulness across a range of different contexts. Importantly, because emotions may be more or less useful depending on the context, beliefs regarding the usefulness of specific types of positive emotions may contribute to their impact on cognition and behavior.

Although our results suggest that in the context of critical feedback, beliefs regarding the usefulness pride and appreciation are associated with different ways of thinking, emotions may also be associated with different cognitions and behaviors in other contexts and we encourage future research to examine this issue more closely. For example, research indicates that anger is useful in confrontational contexts because it leads to aggression and other self-promoting behaviors (Tamir et al., 2008).

Although our findings support our theorizing that perceptions of emotional utility influenced attributions and intentions, there are other considerations that we encourage future research to examine more closely. For example, although we found that reported utility of pride and appreciation were associated with attributions and intentions, the role of the actual experience of emotion (in this case, pride and appreciation) should be further examined. According to expectancy-value models in psychology (e.g., Ajzen & Fishbein, 1970; Eccles, 1994), it is likely that perceiving an emotion as useful leads to experiencing that emotion, which in turn may increase the perceived usefulness of that emotion (expectancy-value model of emotion regulation; Tamir, Salerno, Rhodes, & Schreier, under review). One implication from this area of research is that experiencing an emotion and perceiving it as useful are inherently linked and we encourage future research to examine the relative roles of each of these constructs in cognition and behavior. It is also possible that self-reports of the usefulness of pride/appreciation actually reflected the degree of activation of emotion schemas independent of their utility. However, this explanation is unlikely given that our manipulation emphasized the ways in which pride and appreciation are useful. Nonetheless, we encourage future research to further examine the relationship between perceptions of emotional utility and emotion schemas.

Finally, in the present research we measured intentions. Although intentions are associated with actual behavior, it will be important for future research to assess overt behavior. It may also be beneficial for future research to include measures of felt affect of specific types of emotions. We believe the current research contributes to the existing literature by outlining how specific types of positive emotions may be related to differences in attributions and intentions and by suggesting the possibility that such outcomes may be influenced by emotion schemas, including perceptions of utility.

## CHAPTER 5: PROJECT 4 AND EXAMINING THE ROLE OF PERCEIVED UTILITY OF EMOTION IN DEPRESSION<sup>8</sup>

Research has found that, compared to healthy controls, individuals who are depressed experience more negative affect, less positive affect, and are more emotionally dysregulated (Berenbaum & Oltmanns, 1992; Bylsma, Taylor-Clift, & Rottenberg, 2011; Joormann, Siemer & Gotlib, 2007; Mor et al., 2008). Therefore, we know quite a bit regarding the role of felt affect in depression. However, we currently have a limited understanding of the many ways in which other aspects of emotion may be linked to depression. The goals of the current research were to examine whether: (a) the perceived utility of specific types of emotions would be associated with depression, above and beyond the actual experience of emotion; and (b) interpersonal sensitivity, operationalized as negative affect experienced in response to critical feedback, would at least partially mediate the link between perceived utility of emotion and depression. Our hypotheses were guided by three relatively distinct bodies of literature: (a) utilitarian considerations in emotion; (b) interpersonal sensitivity; and (c) interpersonal conceptualizations of emotion.

### *Utilitarian Considerations in Emotion*

There is ample evidence that utilitarian considerations in emotion are important in understanding human behavior (e.g., Carver, 2001; Frijda, 1986; Tamir, Chiu, & Gross, 2007; Tamir & Ford, 2012; Tsai, Miao, Seppala, & Yeung, 2007). In the current research we examined the potential role of perceptions of the usefulness of emotions (i.e., perceived utility of emotion; Chow & Berenbaum, 2012) in understanding depression.

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<sup>8</sup> This research was completed with the assistance of Howard Berenbaum and Luis E. Flores, Jr., both of whom are listed as co-authors in the original manuscript.

Although perceptions of emotional utility, like virtually all emotion variables, can be context-specific (e.g., Tamir et al., 2007), research has also found that they are linked to stable factors, such as personality traits (e.g., Chow & Berenbaum, 2012; Tamir, 2005, 2009; Tamir & Ford, 2012). For example, individuals high in certain personality traits (e.g., neuroticism) will choose to increase their level of specific emotional states (e.g., worry) because doing so provides utilitarian benefits (e.g., being aware of threat; Tamir, 2005). Such research demonstrates that whereas emotions are often viewed as outcomes of events, beliefs regarding the usefulness of emotions can be determinants of emotional experiences and behavior. Based on this and previous research showing that emotions are closely linked to cognitions, regulatory abilities, and behaviors (e.g., Frijda, 1986; Isen & Levin, 1972; Lyubomirsky, King, & Diener, 2005; Tamir, 2005, 2009; Tamir & Ford, 2012), perceptions of emotional utility are likely to influence one's perceptions of events and propensity to engage in emotional experience and behavioral actions.

### *Interpersonal Sensitivity*

Despite the overwhelming importance of interpersonal factors in depression (e.g., Boyce & Mason, 1996; Coyne, 1976; Downey & Feldman, 1996; Joiner, 2002), little is known regarding how these factors develop. In the current research we examined the broad construct of interpersonal sensitivity, which is associated with depressive symptoms, severity of depression, onset and duration of illness, and response to treatment (e.g., Boyce & Parker, 1989; Davidson, Zisook, Giller, & Helms, 1989). Research on interpersonal sensitivity, which is a broad construct that includes sensitivity to rejection and sensitivity to criticism, has found that interpersonally sensitive individuals are quick to take offense, are extremely sensitive to criticism, and more readily perceive and overreact to negative information (e.g., Ayduk,

Downey, & Kim, 2001; Davidson et al., 1989; Downey & Feldman, 1996; Wilhelm, Boyce, & Brownhill, 2004). Based on previous findings, one might expect that individuals high in interpersonal sensitivity would have greater levels of negative affect in response to critical feedback. As discussed in greater detail below, we theorized that the degree to which individuals would experience negative affect in response to critical feedback would in part depend on individual differences in the perceived utility of specific types of emotions.

### *Interpersonal Conceptualizations of Emotion*

In the current research we differentiated emotions on the bases of the following two dimensions: (a) positive versus negative valence; and (b) self-serving versus other-serving (Chow & Berenbaum, 2012). Our decision to parse emotions based on positive versus negative valence is based on a wealth of emotion research demonstrating the stability and robustness of this dimension (e.g., Feldman Barrett & Russell, 1999; Wierzbicka, 1992; Russell, 1991). Research has found that deficits in the experience of positive affect are important in understanding depression (Berenbaum & Oltmanns, 1992; Clark & Watson, 1991; Pizzagalli, Iosifescu, Hallett, Ratner, & Fava, 2008; Watson et al., 1995; Watson, Clark, & Carey, 1988). Thus, in terms of valence, we expected perceived utility of positive emotions to be negatively associated with depression. Because researchers have yet to fully explore which *specific* positive emotions (e.g., pride, appreciation) are associated with depression, as described below, we examined the potential importance of specific types of positive emotions in relation to depression.

Our decision to parse emotions according to the dimension of self-serving versus other-serving is based on emotion research demonstrating: (a) the importance of differentiating the self from others (e.g., Kitayama, Markus, & Kurokawa, 2000; Ortony, Clore, & Collins, 1988); and



(b) that whereas some emotions (e.g., pride) serve to inflate one's esteem and promote one's independence (i.e., self-centered emotions), other emotions (e.g., appreciation) serve to keep one's esteem in check and to promote interdependence (i.e., other-centered emotions) (Adler & Fagley, 2005; Chow & Berenbaum, 2012; Haidt, 2003; Kitayama et al., 2000; Tangney, Stuewig, & Mashek, 2007). Further, given the wealth of research highlighting the importance of interpersonal functioning in the etiology and maintenance of depression, it would appear important to examine a conceptualization of emotion that accounts for this dynamic. In terms of other-serving emotions, research on appreciation (or gratitude), respectfulness, and humility has found that these constructs are associated with prosocial behaviors, positive appraisals, healthy social relationships, and well-being (e.g., Adler & Fagley, 2005; Davis et al., 2012; Emmons & McCullough, 2003; Exline & Hill, 2012; Kitayama et al., 2000). We theorized that due to their emphasis on interdependence and connectedness with others, when confronted with critical feedback individuals who perceived other-serving positive emotions to be useful would have lower levels of interpersonal sensitivity and, in turn, depression because they would be: (a) more likely to perceive negative comments as helpful rather than hurtful; (b) less likely to perceive criticism as personal attacks on their esteem or abilities; and (c) less likely to experience negative affect after receiving criticism from others.

In contrast to perceived utility of other-serving positive emotions, we did not expect perceived utility of self-serving positive emotions to be associated with interpersonal sensitivity or depression when taking into account the actual experience of those emotions. These predictions may seem odd given that past research has found that the experience of self-centered positive emotions, such as (self-directed) happiness, are associated with depression (e.g., Higgins, 1987; Mor et al., 2010; Orth, Robins, & Soto, 2010). However, from an interpersonal

perspective, perceiving such emotions (e.g., pride, deservingness) to be useful may not aid in building relationships and, in certain contexts (e.g., receiving critical feedback), may actually lead to more negative views of others. For example, research has found that pride, which is often differentiated into the facets of authentic pride and hubristic pride (e.g., Tracy & Robins, 2007), is associated with self-esteem and appraisals of self-worth (e.g., Mascolo & Fischer, 1995; Tangney et al., 2007). Thus, someone who perceives self-serving emotions to be highly useful may be more sensitive to self-disconfirming information, leading to greater levels of negative affect and higher levels of depression when confronted with critical feedback.

### *Study Hypotheses*

In Study 1, we examined the association between perceived utility of emotion and depression. We hypothesized that individuals high in perceived utility of other-serving positive emotions would have lower levels of depression than would individuals low in perceived utility of those same emotions, even when taking into account shared variance with the emotions people actually reported experiencing. In Study 2, we expected to replicate the findings regarding perceived utility of other-centered positive emotions and depression. We also examined, by eliciting negative affective responses to critical feedback, the link between perceived utility of other-serving positive emotions and interpersonal sensitivity. Importantly, because affective experience may be associated with reflective operations as well as indirect processes (e.g., Tamir et al., 2007), we measured negative affective responses to criticism both directly (using a self-report measure) and indirectly (using content from writing samples). We expected that perceived utility of other-serving positive emotions would (directly and indirectly) moderate the impact of critical feedback on negative affect. Further, we hypothesized that negative affective responses

to critical feedback would at least partially mediate the link between perceived utility of emotion and depression.

## Study 1

### Method

#### Participants

Participants were undergraduate students at a large, Midwestern university. Participants were 142 European Americans (46% female,  $M_{\text{age}} = 18.9$ ), 90 Chinese Americans (51% female,  $M_{\text{age}} = 19.1$ ), and 66 Korean Americans (47% female,  $M_{\text{age}} = 19.5$ ).<sup>9</sup> Participants completed all questionnaires in English in one session and were awarded class credit.<sup>10</sup>

#### Instruments

*Perceived Utility of Emotion.* The Perceived Affect Utility Scale (PAUSE; Chow & Berenbaum, 2012) was used to measure perceived utility of emotions. Because we theorize that for an emotion to be considered useful it must facilitate the attainment of multiple goals that are relevant to the individual, participants were first asked to take a minute to list as many goals and expectations as they could think of (this portion served only as a prime for awareness of goals). The scored portion of the measure consists of six stems (three used for positive emotions and three used for negative emotions), with each stem followed by a list of words that describe specific emotions (e.g., appreciative, ashamed). Examples of stems are “*feeling [positive*

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<sup>9</sup> Because there was not a trend of ethnic group moderating the link between perceived utility of emotions and depression, we present results for all participants.

<sup>10</sup> The data used in Study 1 were used in a previous publication that focused on group differences in culture (Chow & Berenbaum, 2012). Therefore, culture is not examined in this manuscript. Further, the findings reported regarding depression in this manuscript were not included in the earlier publication.

*emotion] lets me know that I am living up to my expectations” and “feeling [negative emotion] lets me know that I am not living up to my expectations”* (for more information on the actual items and structure of the PAUSE, see Chow & Berenbaum, 2012). The PAUSE pairs positive and negative emotion words with success and failure stems, respectively (e.g., “*feeling proud lets me know that I am living up to my expectations*” and “*feeling ashamed lets me know that I am not living up to my expectations*”), and in this respect is consistent with existing theories of emotion (Frijda, 1986; Ortony et al., 1988; Carver, 2003). Participants are asked to rate the extent to which they agree with each statement on a 1 (never) to 5 (all the time) scale.

We used the PAUSE to measure perceived utility of three positive self-serving emotions (happy for self, proud, deserving), three negative self-serving emotions (angry, disgusted, jealous), three positive other-serving emotions (appreciative, humble, respectful), and three negative other-serving emotions<sup>11</sup> (ashamed, guilty, embarrassed) (Chow & Berenbaum, 2012). The perceived utility of each quadrant of emotions (e.g., other-serving positive emotions) is measured using nine items (e.g., each of the three other-serving positive emotion words paired with each of the three stems used for positive emotions). An overall score of perceived utility of each emotion quadrant was computed by averaging across the nine items relevant to that particular emotion quadrant. Internal consistencies of the emotion quadrant subscales were as follows: self-serving positive = .85, other-serving positive = .85, self-serving negative = .80, other-serving negative = .86.

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<sup>11</sup> Although there is overlap between other-serving emotions and self-conscious emotions, particularly for negative emotions (e.g., ashamed is both other-serving and self-conscious), not all other-serving emotions are self-conscious (e.g., appreciative) and not all self-conscious emotions are other-serving (e.g., pride).

*Actual Experience of Emotion.* To measure the emotions individuals actually reported experiencing, we asked participants the degree to which they typically experienced a list of emotions (e.g., proud, appreciative) over the course of an average week. The scores for the three emotions representing each emotion quadrant (e.g., other-serving positive) were averaged to provide an overall score of actual experience of that particular emotion quadrant. Internal consistencies of the emotion quadrant subscales were as follows: self-serving positive = .73, other-serving positive = .64, self-serving negative = .55, other-serving negative = .67.

*Depression.* The 22-item Anhedonic Depression scale of the Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991) was used to obtain an index of depressive symptoms. The depression subscale of the MASQ has been shown to have good clinical utility and is predictive of concurrent depression (Bredemeier et al., 2010). Example items include, “felt like nothing was very enjoyable,” and “thought about death or suicide.” Participants rated items on a 1 (not at all) to 5 (extremely) scale. Internal consistency of the MASQ Anhedonic Depression scale was good ( $\alpha = .90$ ).

## **Results and Discussion**

As seen in Table 8 (left side), perceived utility of self-serving positive and other-serving positive emotions were significantly negatively associated with depression. We then computed partial correlations to determine whether perceived utility of emotion would be associated with depression, after taking into account reported experience of emotion. As seen in Table 8, perceived utility of other-serving positive emotions continued to be significantly negatively associated with depression, even after taking into account reported actual experience of those same emotions. In contrast, the relation between depression and perceived utility of self-serving positive emotions became quite small and no longer significant when taking into account

reported actual experience of those same emotions. We conducted Study 2 to: (a) replicate these findings using a different sample; and (b) explore a mechanism that could at least partially account for the link between perceived utility of other-serving positive emotions and depression.

## Study 2

### Method

#### Participants

Participants were 185 undergraduate students (62% female; 108 European-American, 44 Asian-American, 16 African-American, and 17 Latino-American) between the ages of 18 and 22 ( $M = 19.2$ ;  $SD = 1.2$ ) at a large, Midwestern university. Participants were awarded class credit for participating. All participants provided informed consent and were fully debriefed after completing the study.

#### Procedure and Materials

Participants were told that they would participate in a study examining factors related to verbal intelligence and writing skills. Participants completed two writing tasks in addition to self-report measures. The first writing task was used to obtain a baseline measure of indirect negative affect. The second writing task was used to obtain an indirect measure of negative affect after receiving critical feedback. Participants also completed self-report measures of current affect before and after receiving critical feedback. Between the first and second writing tasks, participants completed self-report measures to assess perceived utility of emotion, actual experience of emotion, and depression.

Participants were told the first writing task would be used to assess verbal intelligence and writing skills. Participants were instructed to write a creative short story which they were told would be scored using a well-validated computer software program. In actual fact, writing

samples were analyzed for negative affect, which has been found to be associated with mood and emotional processes (Kahn, Tobin, Massey, & Anderson, 2007; Tausczik & Pennebaker, 2010). We used a text analysis software program (LIWC: Linguistic Inquiry and Word Count) developed by Pennebaker, Booth, and Francis (2007), which provides scores representing the percentage of words in a given text that match target words found in various language domains (e.g., negative emotion). We used the LIWC scale of negative emotion to obtain a measure of negative affect. Participants were told that their performance on the writing sample would be presented to them later in the study.

To assess affect before and after receiving critical feedback, participants completed the negative affect subscale of the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Participants were instructed to rate (1 = very slightly or not at all; 5 = extremely) the degree to which they were currently experiencing 10 negative emotions (e.g., afraid, upset). Before receiving critical feedback, internal consistency (Cronbach's Alpha) of the negative affect scale was .71. After receiving critical feedback, internal consistency of the negative affect scale was .79. Participants also completed the same self-report measures of perceived utility of emotion, actual experience of emotion, and depression as in Study 1. Internal consistencies of the emotion quadrant subscales in the PAUSE were as follows: self-serving positive = .83, other-serving positive = .89, self-serving negative = .80, other-serving negative = .84. Internal consistencies of the emotion quadrant subscales in the measure of actual experience of emotion were as follows: self-serving positive = .74, other-serving positive = .62, self-serving negative = .69, other-serving negative = .61. Internal consistency of the MASQ was good ( $\alpha = .92$ ).

Because they were told that the study was, in part, measuring improvement in writing across two writing tasks, participants were presented with written and oral feedback on their first writing sample. Printed feedback sheets were placed in front of participants and the results were read aloud by the experimenter to ensure that participants were exposed to the information. Feedback sheets contained fabricated percentile and scaled scores, and ranked participants in the “poor” to “below-average” range on several facets of writing with a composite score of “below-average.” All participants were presented with identical critical feedback. Participants then completed the PANAS (which they were told would allow us to account for emotional factors in analyzing writing samples) and provided another writing sample.

## **Results and Discussion**

We began by examining whether our findings from Study 2 replicated those of Study 1. As seen in Table 8 (right side), as predicted, perceived utility of other-serving positive emotions was associated with depression, even after taking into account shared variance with reported experience of those same emotions. Whereas perceived utility of self-serving positive and self-serving negative emotions were significantly associated with depression, this was not the case after taking into account reported experience of those same emotions.

We then tested the hypothesis that the perceived utility of other-serving positive emotions would moderate the impact of critical feedback on negative affect (NA). Specifically, we expected to find that the impact of criticism on negative affect would be weaker among individuals high in perceived utility of other-serving positive emotions than among individuals low in perceived utility of those same emotions. Because time (pre vs. post) was nested within participants, and perceived utility of other-serving positive emotions was a dimensional between-participants variable, we tested our hypothesis using hierarchical linear models (HLM). We



conducted two separate HLM analyses to examine a perceived utility of other-serving positive emotions x time (baseline vs. post-manipulation) interaction when using two types of measurements for negative affect. One HLM model used direct negative affect scores (i.e., PANAS NA) as the dependent variable, and the other HLM model used indirect negative affect scores (i.e., writing sample NA) as the dependent variable. In both models, we identified time as a level 1 variable (within-subject) and perceived utility of other-serving positive emotions as a level 2 variable (between-subject). Perceived utility of other-serving positive emotions was an explanatory variable for the random slopes of intercept and time (i.e., time x perceived utility of other-serving positive emotions interaction). All continuous variables were standardized and time was dummy-coded (0 = baseline; 1 = post-manipulation). As predicted, there was a significant time x perceived utility of other-serving positive emotions interaction for both direct,  $\gamma_{11} = -0.19$ ,  $SE = 0.07$ ,  $t(185) = 2.71$ ,  $p < .01$ , and indirect measures of negative affect,  $\gamma_{11} = -0.32$ ,  $SE = 0.10$ ,  $t(189) = 3.09$ ,  $p < .01$ . Although the analyses above used dimensional affect scores, for the sake of graphically illustrating the nature of the interactions, we graphed (Figure 1) the HLM models by substituting one standard deviation above (“high”) or one standard deviation below (“low”) the mean for the value of perceived utility of other-serving positive emotions in the models. As illustrated in Figure 5, for both direct and indirect measures of negative affect, critical feedback led to greater increases in negative affect among individuals with low perceived utility of other-serving emotions than among individuals with high perceived utility of those same emotions.

We next examined whether negative affective responses to criticism mediated the relationship between perceived utility of other-serving positive emotions and depression. Negative affective responses to criticism were measured by computing Time 2 NA residual

scores (i.e., Time 2 NA scores from which Time 1 NA scores were partialled out), for both indirect and direct measures.<sup>12</sup> To begin, we examined the correlations among the variables used when testing mediation. As expected, perceived utility of other-serving positive emotions was significantly negatively associated with indirect negative affective responses to criticism ( $r = -.20, p < .01$ ) and direct negative affective responses to criticism ( $r = -.20, p < .01$ ). In contrast, whereas depression was significantly positively associated with indirect negative affective responses to criticism ( $r = .23, p < .01$ ), depression was not significantly positively associated with direct negative affective responses to criticism ( $r = .09$ ). Because indirect and direct negative affect in response to criticism were not significantly correlated ( $r = .05$ ), we included both of these variables as separate mediators in the model described below.

We conducted a multiple mediation analysis by using the Preacher and Hayes (2008) bootstrapping macro with 5,000 resamples, which provides 95% accelerated bias-corrected confidence intervals. As seen in Figure 6, as predicted, residual negative affective responses to critical feedback partially mediated the link between perceived utility of other-serving positive emotions and depression. Specifically, whereas indirect negative affect in response to criticism was a significant mediator of the link between perceived utility of other-serving positive emotions and depression (95% CI: -1.84 to -.05), direct negative affect in response to criticism was not (95% CI: -.67 to .32). The direct effect of perceived utility of other-serving positive emotions on depression was still significant when the mediators were included in the model ( $\beta = -.28, p < .01$ ). Taken together, these findings indicate that affective response to criticism, and particularly indirect negative affect in response to criticism, was a partial mediator in the link between perceived utility of other-serving positive emotions and depression.

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<sup>12</sup> The results do not change when using difference scores or raw scores at Time 2, with one exception: when using raw scores, the zero-order correlation between depression and Time 2 direct NA is significant.

In our final analysis we compared our model to an alternative model. Specifically, we explored the feasibility of an alternative model that contained identical variables to those seen in Figure 6, but in which the directions of causality were reversed from the original model (i.e., depression leading to NA, and NA leading to perceived utility of other-serving positive emotions). In this model, neither indirect nor direct affective responses to criticism significantly mediated the link between depression and perceived utility of other-serving positive emotions.

### **General Discussion**

While much research in depression has examined the actual experience of emotion, the importance of other emotion constructs in depression, such as the perceived utility of emotion, has largely been overlooked. As predicted, across two different samples, perceived utility of other-serving positive emotions was associated with depression, even after taking into account the emotions people actually reported experiencing. Our results also suggest that the link between perceived utility of other-serving positive emotions and depression is at least partially mediated by affective responses to criticism. We believe these findings highlight the importance of examining: (a) the potential role of emotion constructs other than the actual experience of emotion in depression; and (b) specific types of emotions in depression.

To our knowledge, this is the first study examining the role of perceived utility of emotion in psychopathology. Whereas research has demonstrated the importance of perceptions of the usefulness of emotions in understanding non-clinical phenomena (e.g., Tamir et al., 2007), our findings suggest that they may also be relevant to understanding depression. We believe that perceived utility of emotion may also contribute to existing research examining the link between depression and certain positive emotions, such as gratitude (e.g., Froh, Emmons, Card, Bono, & Wilson, 2011; Wood, Maltby, Gillett, Linley, & Joseph, 2008). For example, it may be the case

that individuals who perceive gratitude to be particularly useful are more likely to experience gratitude and engage in cognitions and behaviors that decrease levels of depression.

Despite research demonstrating that positive affect is associated with depression (Berenbaum & Oltmanns, 1992; Pizzagalli et al., 2008; Watson et al., 1988), not much is known regarding the potential importance of *specific types* of positive emotions in depression. Our results suggest that perceived utility of other-serving positive emotions plays a role in depression. We also theorize that perceived utility of other types of emotions may help researchers understand other aspects of psychopathology, such as externalizing disorders. For example, it is possible that individuals who perceive anger at others to be particularly useful are more likely to commit violent acts. Although in the current research we parsed emotions according to the dimensions of: (a) positive versus negative valence; and (b) self-serving versus other-serving, we recognize that this is only one way to parse emotions. We recommend that future research continue to explore other emotion parsings and continue to examine the role of perceived utility of specific types of emotions in various forms of psychopathology.

Relatively little is known regarding the development of interpersonal factors, such as interpersonal sensitivity, in depression. Our findings raise the possibility that perceptions of emotional utility contribute to interpersonal sensitivity. Because perceived utility of other-serving positive emotions moderated the impact of critical feedback on both direct and indirect measures of negative affect, we can be more confident that our findings are not merely artifacts of common method variance. Further, our results suggest that indirect, rather than direct, affective responses to criticism mediate the link between perceived utility of emotion and depression. We hypothesize that because perceived utility of emotion is associated with relatively stable patterns of thinking and feeling, individuals low in perceived utility of other-

serving positive emotions are more likely to: (a) internalize negative feedback as information discounting the self; and (b) reflect their inner states through indirect behavioral measures. We recommend that future research continue to examine, using both indirect and direct methods, the link between perceived utility of emotion, interpersonal sensitivity, and depression.

In addition to those already mentioned, we have several suggestions for future research. Although our data was collected from college students, replicating the link between perceived utility of other-serving positive emotions and depression across two large samples gives us confidence in our findings. Nonetheless, in exploring the role of perceived utility of emotion in depression, future research may wish to use samples drawn from community and clinical populations. Due to the correlational nature of the current data, it is difficult to draw conclusions regarding causality. Future research may wish to conduct true experiments (e.g., manipulating perceived utility of specific types of emotions) in order to explore important cause-and-effect processes, as well as examine other potentially relevant variables (e.g., personality). Future research may wish to use other methods of assessing symptoms of mental disorders, such as clinical interviews and third-person reports. Finally, we recommend that researchers include meta-emotion constructs, such as perceived utility of emotion and ideal affect (Tsai et al., 2007), in their studies. Although they are often overlooked, such constructs may allow us to understand psychopathology above and beyond commonly studied emotional phenomena (e.g., actual experience of emotion), as indicated in the present research.

## CHAPTER 6: GENERAL CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

Projects 1 and 2 examined the measurement of perceived utility of emotion and the stability of this construct across time and contexts. Findings from Project 3 suggest that not only does perceived utility of emotion play a role in attributions and behavioral intentions, but that it may be shaped through emotion inductions. Finally, findings from Project 4 highlight the potential importance of perceived utility of emotion in interpersonal sensitivity and depression. I will discuss what the current research contributes to our understanding of perceptions of emotional utility and the importance of studying meta-emotion. I will then discuss how perceived utility of emotion may broaden our understanding of depression and other forms of psychopathology, as well as introduce some promising areas of future research.

One theme that was echoed in multiple findings is that of perceived utility of emotion being associated with individual differences and depression, even after taking into account the actual experience of emotion. From a conceptual standpoint, factoring out the actual experience of emotion from perceived utility of emotion provides a very robust test of the construct validity of perceived utility of emotion. Indeed, one's perceptions of emotional utility are theorized to be a contributing factor in the emotions one experiences (Chow & Berenbaum, 2012; Chow et al., 2013; Tamir, 2006; Tamir et al., 2006). Likewise, emotional experience may contribute to perceptions of emotional utility. Thus, given that these two constructs overlap in terms of theory and measurement, controlling for felt affect should eliminate a large amount of variance between perceived utility of emotion and other variables. That perceived utility of emotion was significantly associated with individual difference variables, even after taking into account felt affect, suggests that this construct may play a role in individual differences and human functioning through alternative pathways. According to cognitive theories in emotion (e.g.,

Ortony et al., 1988), perceived utility of emotion may be associated with the tendency to engage in specific types of subjective cognitive appraisals, which may or may not lead to subjective “feelings.” As a precursor to “feelings”, perceived utility of emotion may play an early yet prominent role in the emotion process.

The current research supports a growing body of research demonstrating the importance of meta-emotion constructs (e.g., Moon & Berenbaum, 2009; Tamir, 2005; Tamir et al., 2006; Tsai, 2007). Meta-emotion generally refers to psychological constructs associated with felt affect (Gottman, Katz, & Hooven, 1997), such as thoughts and attitudes regarding the emotions one experiences, and has received relatively little attention in relation to research on felt affect. Perceived utility of emotion may not only play a role in the actual experience of emotion, but may also provide researchers with a better understanding of other meta-emotion constructs. For example, research in ideal affect has found that individuals differ in terms of the emotions they ideally want to experience (Tsai, 2007; Tsai et al., 2006). One factor in preferences for emotional experience may be perceptions regarding the usefulness of those emotions. Perceived utility of emotion may also be associated with emotional awareness (composed of attention to emotion and clarity of emotion), which plays a prominent role in behavior and affective instability (e.g., Moon & Berenbaum, 2009; Thompson, Dizén, & Berenbaum, 2009). For example, the degree to which one perceives emotions to be useful may lead to more frequent monitoring of specific mood states (a key component of attention to emotion) and increased ability to identify and discriminate between certain types of emotions (which are key components of clarity of emotion).

Although Project 4 found that perceived utility of other-serving positive emotions plays a role in depression through lower levels of negative affect in response to critical feedback, I

theorize that perceived utility of emotion may: (a) be linked to depression through other pathways; and (b) play a role in other forms of psychopathology. In terms of perceived utility of emotion and depression, a range of interpersonal factors may account for the link between perceived utility of other-serving positive emotions and depression. For example, research has found that interpersonal competence, a broad construct that encompasses social skills and interpersonal problem solving abilities, is associated with the development and maintenance of depression (Buhrmester, Furman, Wittenberg, & Reis, 1988; Hammen, Shih, & Brennan, 2004; Joiner, 2002; Segrin & Abramson, 1994). According to the “social skills-stress hypothesis” (Segrin & Abramson, 1994), poor social skills confer vulnerability to depression because of their association with ineffective coping with stressors. Importantly, one way in which individuals develop interpersonal competence may be through perceived utility of emotion. Individuals who possess goals related to good interpersonal functioning are likely to have high perceived utility of other-serving positive emotions, due to the potential importance of those emotions in facilitating interpersonal goals (e.g., maintaining relationships with others). Over time, cognitions and behaviors associated with other-serving positive emotions (e.g., anticipating the needs of others, engaging in prosocial acts) may lead to an ever changing, yet core set of learned interpersonal skills which are in turn reinforced by the environment (e.g., being accepted into social groups, being cared for by others). In addition to interpersonal competence, perceived utility of emotion may also play a role in depression through other protective interpersonal factors, such as social support.

Perceived utility of emotion may also influence depression through cognitive-affective pathways. Early cognitive theories in depression highlight the notion that depression is associated with attributions that are stable, internal, and global, and that depressed individuals



tend to focus on the most negative features of themselves, their environments, and the future (known as the “depressive triad”; Beck, 1967). More recent cognitive vulnerability-stress models in depression indicate that underlying cognitive vulnerabilities, such as negative cognitive style and hopelessness, are associated with the development and maintenance of depression (e.g., Abramson, Metalsky, & Alloy, 1989; Alloy, Abramson, Whitehouse, Hogan, & Panzarella, 2006). Thus, depression is associated with negative self-engrossing thoughts (e.g., “I am worthless”, “I can’t do anything right”) and negative perceptions of events that are egocentric and/or greatly inflate the importance of oneself (e.g., “It is entirely my fault that the team lost”, “if only I never existed, everyone would be so much better off”). In contrast, research in appreciation/gratitude has found that an appreciative/grateful orientation leads to greater well-being through subjective cognitive appraisals, an increased awareness of one’s blessings, and being thankful of the positive aspects in life (Emmons & McCullough, 2003; Rash, Matsuba, & Prkachin, 2011). Thus, perceiving other-serving positive emotions as useful may lead to lower levels of depression through subjective positive appraisals of oneself, others, and events. For example, individuals high in perceived utility of other-serving positive emotions may be more likely to interpret events as blessings (e.g., “I am so lucky to have this opportunity”) while simultaneously diminishing negative self-centered thoughts (e.g., “even though we lost, the entire team fought hard and tried their best”), than individuals low in perceived utility of those same emotions. Similarly, whereas self-serving negative emotions (e.g., anger at others, jealousy) are associated with putting the needs of oneself above those of others, individuals low in perceived utility of those emotions may be less likely to interpret events as threatening (e.g., “just because the team lost doesn’t mean anyone is to blame”).

In addition to depression, perceived utility of emotion may play a role in other forms of psychopathology. An abundance of research demonstrates the power of worry beliefs in numerous forms of anxiety disorders, such as Generalized Anxiety Disorder (e.g., Berenbaum, 2010; Borkovec, 1994). Research has also found evidence for trait-consistent emotion regulation, such that individuals high in neuroticism will choose to increase their levels of worry when confronted with a challenging task (Tamir, 2005). Thus, persistent and intrusive thoughts in highly anxious individuals may be attributed to perceiving certain emotions (e.g., worry, fear) as particularly useful in accomplishing goals, such as avoiding threat. Further, positive beliefs regarding the utility of certain negative emotions may play a prominent role in experiential avoidance, which is present in numerous forms of psychopathology (e.g., Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). By overvaluing emotions such as worry and fear, behaviors associated with experiential avoidance (e.g., obsessive and intrusive thoughts, compulsions) may be developed and maintained through negative reinforcement. In addition to anxiety, perceived utility of emotion may play a role in personality disorders such as Antisocial Personality Disorder and Borderline Personality Disorder. Impulsivity and a pattern of emotion dysregulation are prominent features of both disorders (DeShong & Kurtz, 2013; Hughes, Crowell, Uyeji, & Coan, 2012; Sargeant, Daughters, Curtin, Schuster, & Lejuez, 2011; Wagner & Linehan, 1999). These features, which often lead to unstable relationships and violent/impulsive behaviors, may be associated with positive beliefs regarding the usefulness of specific emotions in accomplishing goals (e.g., satisfying one's own needs and desires), such as anger at others, shame, and jealousy.

As described above, one avenue of research pertains to broadening our knowledge of the role of perceived utility of emotion in psychopathology. To accomplish this, I believe two

separate, yet compatible, methods are necessary. Due to the novelty of perceived utility of emotion, it will be important to examine the (cross-sectional and longitudinal) relationship between perceived utility of emotion and psychopathology in large, representative samples. This will allow for the estimation of the magnitude and robustness of this relationship, as well as establish the construct validity of perceived utility of emotion in non-student samples. Assuming that a reliable relationship between perceived utility of emotion and psychopathology is found, it will be important to supplement this research by conducting experiments to explore mechanisms that may account for this relationship. For example, studies involving manipulations of perceived utility of emotion will allow for inferences regarding important cause-and-effect relationships between perceived utility of emotion and psychopathology. Another avenue of research pertains to examining the potential role of perceived utility of emotion in psychopathology interventions. For example, existing research has found that gratitude interventions are effective in increasing well-being and positive affect (Rash et al., 2011; Wood, Froh, & Geraghty, 2010). Increasing the perceived utility of emotions such as gratitude and appreciation may lead to high levels of positive affect and well-being, thereby leading to low levels of depressive symptoms. Further, as experiential avoidance is central to the theoretical underpinning of acceptance-based interventions, it may be worthwhile to examine the role of emotion beliefs in such treatments. For example, one's acceptance of emotional experience may depend on the degree to which particular emotions are perceived to be useful. Finally, another avenue of research pertains to examining the potential role of perceived utility of emotion in dynamic models involving changes in emotion, personality traits, and psychopathology. For example, I theorize that the relation between perceived utility of emotion and personality is transactional, such that both variables influence each other over time. For example, individuals

high in perceived utility of other-serving positive emotions (e.g., appreciation) likely elicit positive reactions from others and develop strong social ties, which in turn lead to increases in agreeableness. Likewise, individuals high in agreeableness likely possess strong interdependent/prosocial goals, which in turn lead to increases in perceived utility of other-serving positive emotions.

In sum, the present research provides evidence for the validity and potential importance of perceptions of emotional utility in understanding human functioning and depression. Much work remains to be done to explore this fascinating construct.

# TABLES

Table 1. Study 1 (top) and Study 3 (bottom) fit statistics for the two-facet and three facet models, for each emotion grouping

<b>Study 1</b>							
Emotion Grouping	DF	$\chi^2$	$\chi^2/DF$	<i>p</i>	RMSEA	IFI	CFI
<i>Three-Facet Model</i>							
Self-serving positive	15	22.82	1.52	.09	.04	.99	.94
Other-serving positive	15	12.37	.83	.65	.00	1	.97
Self-serving negative	15	28.83	1.92	.02	.05	.99	.99
Other-serving negative	15	15.09	1.00	.45	.00	1	1
Generic positive	15	32.01	2.13	.01	.06	.99	.99
Generic negative	15	22.77	1.52	.09	.04	.99	.99
<i>Two-Facet Model</i>							
Self-serving positive	5	6.82	1.36	.24	.03	1	1
Other-serving positive	5	6.96	1.39	.22	.03	1	1
Self-serving negative	5	9.51	1.90	.09	.05	.99	.99
Other-serving negative	5	6.54	1.31	.26	.03	1	1
Generic positive	5	6.12	1.22	.30	.03	1	1
Generic negative	5	5.78	1.16	.33	.02	1	1
<b>Study 3</b>							
<i>Three-Facet Model</i>							
Self-serving positive	15	16.89	1.13	.33	.02	1	1
Other-serving positive	15	24.31	1.62	.06	.05	.99	.99
Self-serving negative	15	20.73	1.38	.15	.04	1	1
Other-serving negative	15	29.22	1.95	.02	.06	.99	.99
Generic positive	15	38.17	2.55	0	.08	.99	.98
Generic negative	15	32.91	2.19	.01	.07	.99	.99
<i>Two-Facet Model</i>							
Self-serving positive	5	3.02	.60	.70	.00	1	1
Other-serving positive	5	3.10	.69	.69	.00	1	1
Self-serving negative	5	10.29	2.06	.07	.06	1	1
Other-serving negative	5	11.95	2.39	.04	.07	.99	.99
Generic positive	5	6.12	1.22	.30	.03	1	1
Generic negative	5	5.78	1.16	.33	.02	1	1

*Note.* DF = degrees of freedom; RMSEA = root-mean-square-error of approximation; IFI = incremental fit index; CFI = comparative fit index.

Table 2. Zero-order correlations between emotion groupings from the PAUSE-r and individual difference variables

	SS Pos	OS Pos	SS Neg	OS Neg	PA	NA
Depression	-.27**	<b>-.20**</b>	.05	<b>.20**</b>	-.19**	.22**
Independence	.13**	<b>.14**</b>	.01	-.02	.12*	-.06
Interdependence	.03	<b>.20**</b>	.09	.10*	<b>.13*</b>	.04
Extraversion	.24**	.14**	-.01	-.11*	.16**	-.14**
Conscientiousness	.22**	<b>.24**</b>	-.10*	<b>-.25**</b>	<b>.21**</b>	<b>-.22**</b>
Openness	.12*	-.01	-.02	.02	<b>.11*</b>	.02
Neuroticism	<b>-.13**</b>	<b>-.19**</b>	.09*	.15**	-.13*	.16**
Agreeableness	.13**	<b>.24**</b>	-.14**	<b>-.16**</b>	<b>.20**</b>	-.15**

Note. SS Pos = self-serving positive emotions; OS Pos = other-serving positive emotions; SS Neg = self-serving negative emotions; OS Neg = other-serving negative emotions; PA = generic positive emotions; NA = generic negative emotions. In those cases in which a particular emotion grouping (e.g., SS Pos) continued to be significantly associated with a particular individual difference variable (e.g., depression) even after taking into account the actual experience of that emotion grouping, the correlation between that emotion grouping and that individual difference variable is bolded. In those cases in which a particular emotion grouping continued to be significantly associated with a particular individual difference variable even after taking into account ideal affect of that emotion grouping, the correlation between that emotion grouping and that individual difference variable is italicized.

\*  $p < .05$ , \*\*  $p < .01$

Table 3. Zero-order correlations between emotion groupings from the PAUSE-r and individual difference variables

	SS Pos	OS Pos	SS Neg	OS Neg	PA	NA
Extraversion	.20**	.26**	.05	.00	.18**	-.06
Conscientiousness	.14**	.26**	-.27**	-.26**	.19**	-.21**
Openness	.23**	.09	-.04	-.02	.16**	-.07
Neuroticism	-.18**	-.29**	.22**	.21**	-.17**	.21**
Agreeableness	.24**	.36**	-.24**	-.16**	.34**	-.19**

Note. SS Pos = self-serving positive emotions; OS Pos = other-serving positive emotions; SS Neg = self-serving negative emotions; OS Neg = other-serving negative emotions; PA = generic positive emotions; NA = generic negative emotions.

\*  $p < .05$ , \*\*  $p < .01$

Table 4. Variance attributed to individuals versus goals/context

	Original Analyses		Taking into Account Felt Affect	
	Individual Differences/ Between-Individuals	Between-Contexts/ Within-Individuals	Individual Differences/ Between-Individuals	Between-Contexts/ Within-Individuals
Self-Serving Positive	58.9%	12.7%	72.8%	8.4%
Other-Serving Positive	52.7%	26.6%	65.0%	19.6%
Generic Positive	78.6%	4.5%	85.6%	3.0%
Self-Serving Negative	46.5%	32.9%	60.3%	24.4%
Other-Serving Negative	74.3%	0.7%	84.9%	0.4%
Generic Negative	75.7%	1.9%	87.9%	1.0%



Table 5. Variance attributed to individuals versus goals/context

	Original Analyses		Taking into Account Felt Affect	
	Individual Differences/ Between-Individuals	Between-Contexts/ Within-Individuals	Individual Differences/ Between-Individuals	Between-Contexts/ Within-Individuals
Self-Serving Positive	57.8%	0.6%	28.9%	0.8%
Other-Serving Positive	69.9%	0.7%	35.5%	1.0%
Self-Serving Negative	62.8%	0.2%	33.2%	0.4%
Other-Serving Negative	47.5%	0.7%	40.8%	1.0%

Table 6. Unstandardized coefficients of perceptions of emotional utility predicting goals

	Independence/ Personal Prestige	Gratifying Needs/ Being Stimulated	Assisting Others/ Maintaining Relationships	Following Cultural Values/ Inhibiting Desires
Self-Serving Positive	.13*	.12*	-.03	-.06
Other-Serving Positive	-.09	-.07	.37**	.07
Self-Serving Negative	.08	.19**	-.18**	.01
Other-Serving Negative	-.03	.01	-.09*	.11*

\* $p < .05$ . \*\* $p < .01$ .

*Note.* In those cases in which a particular emotion grouping continued to be significantly associated with a particular goal dimension even after taking into account the actual experience of that emotion grouping, the correlation between that emotion grouping and that goal is italicized.

Table 7. Zero-Order and Partial Correlations (Removing Shared Variance with Positive and Negative Affect) between Perceived Utility of Pride/Appreciation and Attributions and Intentions

	Pride Condition		Appreciation Condition	
	Zero-Order Correlation	Partial Correlation	Zero-Order Correlation	Partial Correlation
Benevolent Attributions	-.17*	-.18*	.22**	.18*
Prosocial Intentions	-.20*	-.21*	.15*	.14 <sup>t</sup>

\*\* $p < .01$ . \* $p < .05$ . <sup>t</sup> $p < .08$

Table 8. Zero-Order and Partial Correlations (Removing Shared Variance With Actual Experience of Emotion) Between Perceived Utility of Emotion and Depression

	Study 1		Study 2	
	Zero-Order Correlation	Partial Correlation	Zero-Order Correlation	Partial Correlation
SS pos	-.12*	.06	-.17*	-.01
SS neg	.02	-.03	.15*	.10
OS pos	-.25**	-.15**	-.29**	-.23**
OS neg	.04	-.01	.10	.09

*Note.* SS pos = self-serving positive emotions; OS pos = other- serving positive emotions; SS neg = self- serving negative emotions; OS neg = other- serving negative emotions.

\* $p < .05$ . \*\* $p < .01$ .

## FIGURES

Figure 1. Item characteristic curves (ICC) corresponding to two different emotions, for the domains of informational utility (left panels), motivational utility (middle panels), and behavioral utility (right panels)

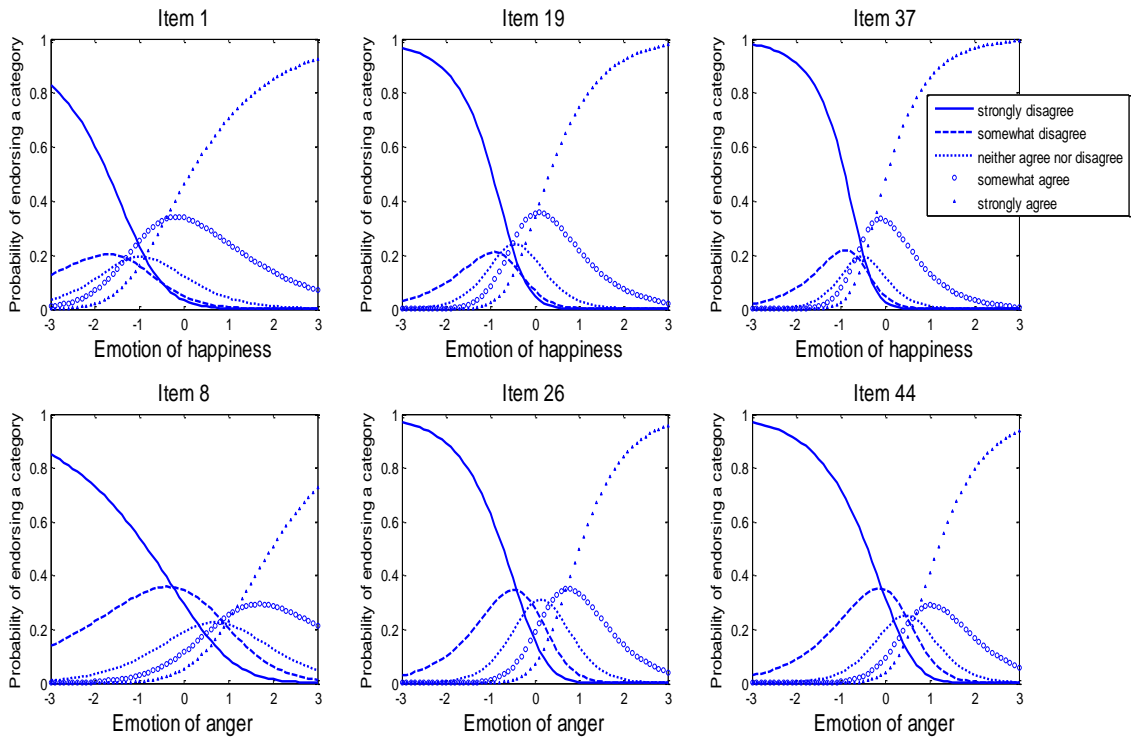


Figure 2. For each emotion grouping (e.g., self-serving positive), a three-facet model representing the PAUSE (left side) was compared against a two-facet model representing the PAUSE-r (right side)

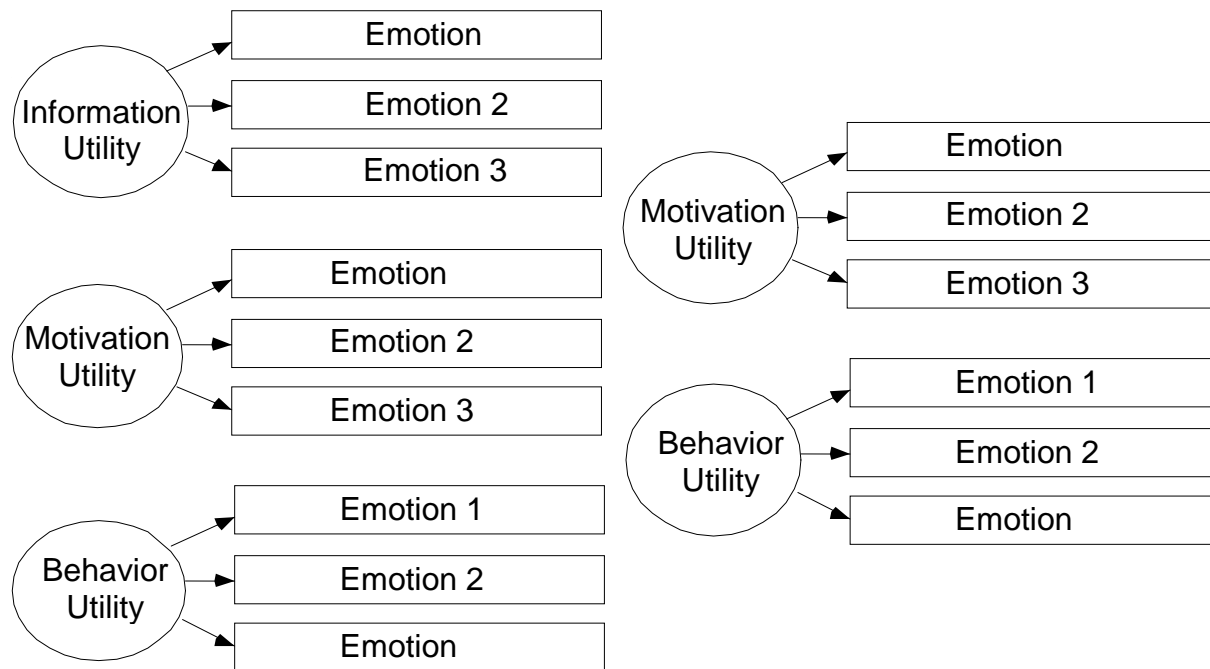


Figure 3. Perceived utility of emotion for independent versus interdependent goals for positive emotions (top) and negative emotions (bottom)

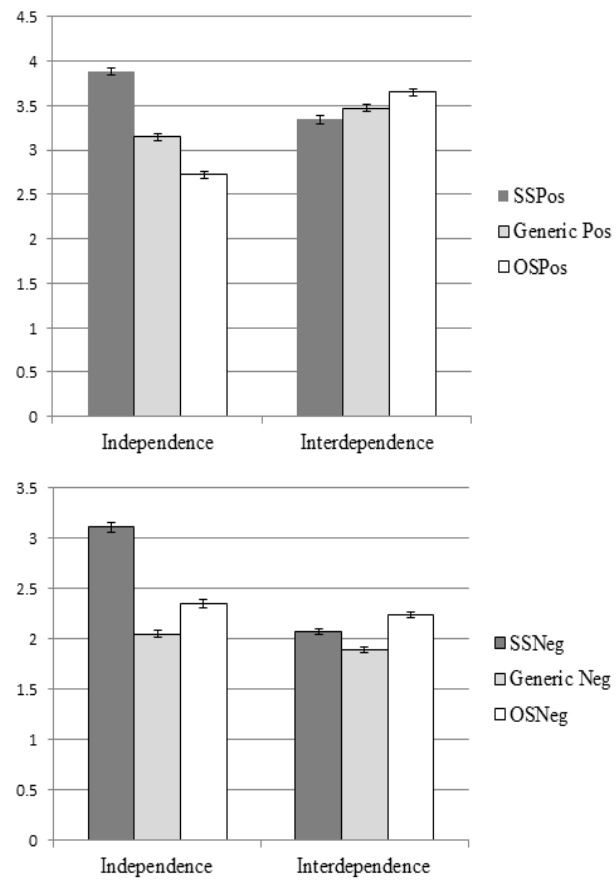


Figure 4. T-scores (with a mean of 50 and a standard deviation of 10) representing attributions of others and intentions, for pride and appreciation induction groups

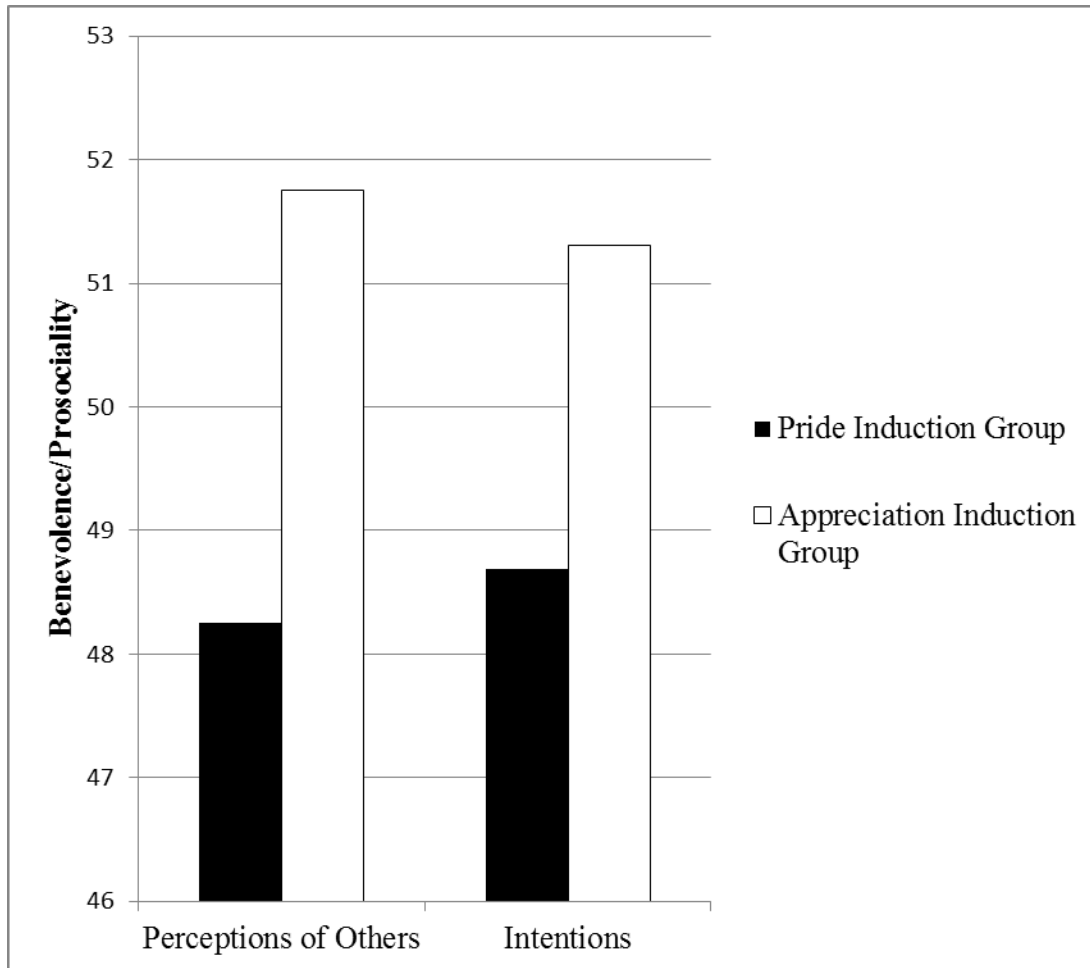




Figure 5. Direct (top) and indirect (bottom) negative affect before and after receiving critical feedback for individuals high- and low- in perceived utility of other-serving positive emotions

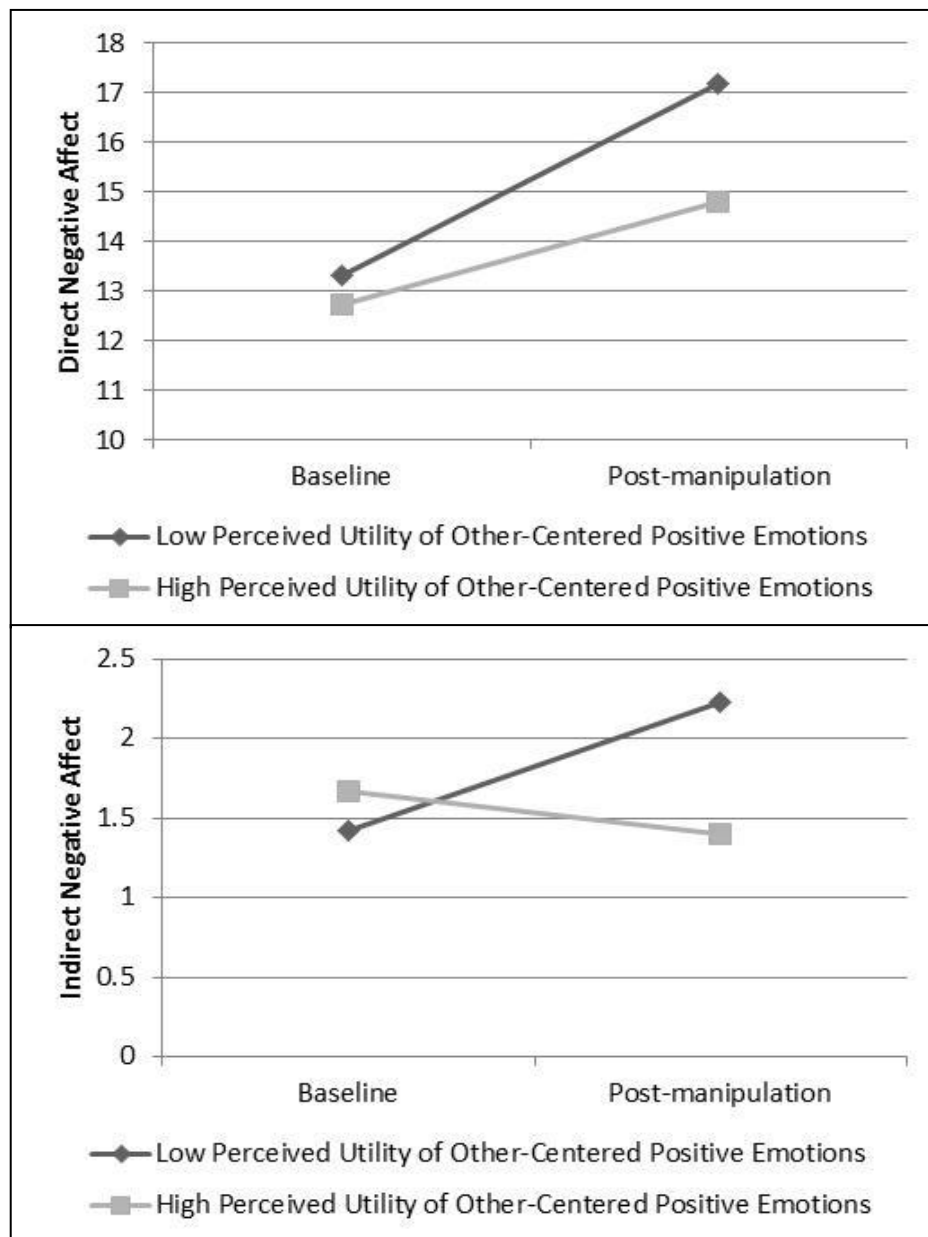
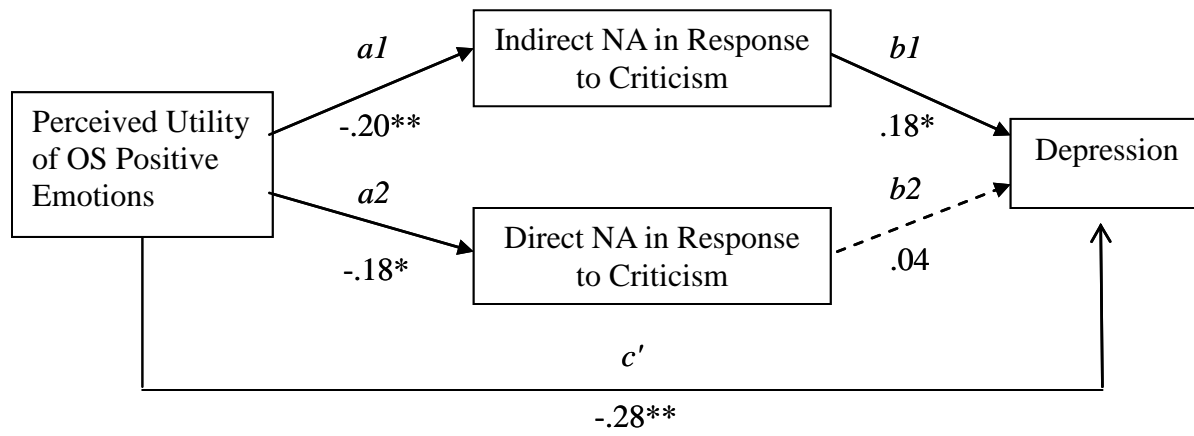


Figure 6. Mediation model and corresponding standardized path coefficients (dotted line represents a non-significant path)



Note. OS Positive Emotions = other- serving positive emotions; NA = negative affect.  
 $*$   $p < .05$ ,  $**$   $p < .01$

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